On Science, Necessity, and the Love of God

by SIMONE WEIL

Essays collected, translated, and edited by RICHARD REES

LONDON
OXFORD UNIVERSITY PRESS
NEW YORK TORONTO
1968

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Oxford University Press, Ely House, London W.1

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Selection and
English translation
© Oxford University Press 1968

Printed in Great Britain by
Alden & Mowbray Ltd
at the Alden Press, Oxford

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Introduction

In 1937 Simone Weil wrote to Jean Posternak:

> For many reasons, I believe as you do that science is entering a period of crisis graver than that of the fifth century [B.C.], which is accompanied, as then, by a moral crisis and a subservience to purely political values, in other words, to power. . . . If the crisis in our age is comparable to that of the fifth century, then there is an obvious duty: to make another effort comparable to that of Eudoxus.[1]

By inventing, among other things, the geometrical theory of proportions (which anticipated by about twenty-two centuries the work of Weierstrass) Eudoxus overcame the crisis which the discovery of irrationals had created in Greek science. Simone Weil, believing that the situation in twentieth-century physics is analogous to the Greek crisis and even more serious, and that it is an 'obvious duty' to make an effort comparable to that of Eudoxus, was not likely to shirk the effort.

Apart from the letter to Jean Posternak referred to above and a series of letters[2] to her brother, who is one of the most eminent living mathematicians, the essays in the first half of this book are all that she is known to have written on the subject. She did not get much beyond the preliminary spadework of clearing the ground, but by doing that much she did what only a very small number of thinkers today possess the qualifications for doing and what those few seem very reluctant to do. It may be that, if she had lived to continue the work, she would have modified or reconsidered some of the specific criticisms—of quantum theory, for example—which she advances in these essays; but this would not affect the value of her main effort,

[1] Simone Weil, *Seventy Letters* (Oxford University Press, 1965), pp. 90–91.
[2] Ibid., pp. 112–27 and 133–5.

which is to establish science in its rightful place within a survey of the total intellectual and cultural situation of our age.

> Nowadays a man can belong to so-called cultured circles without, on the one hand, having any sort of conception about human destiny or, on the other hand, being aware, for example, that all the constellations are not visible at all seasons of the year.[1]

(She might well have gone further and said that one can be what is called an 'intellectual' nowadays, or have a successful academic career, without possessing any culture of any kind.)

Simone Weil believed that unless it embodies some conception of human destiny, science cannot long survive. The subject of the two parts of this book is really the same. It is a conception of human destiny—which is approached in the first part mainly from a scientific point of view and in the second mainly from a religious and philosophical point of view. The single idea behind both points of view is impossible to summarize in a sentence, but the careful reader of this book will be able to perceive that it is indicated in a sentence on p. 195, near the end of the essay on 'The Love of God and Affliction'.

> The idea of necessity as the material common to art, science, and every kind of labour is the door by which Christianity can enter profane life and permeate the whole of it.

Indeed, it would not have been inappropriate to give this volume some such title as 'The Necessity of Necessity'. And yet, although Simone Weil carried determinism in psychology about as far as it is possible to go, she was neither fatalistic nor resigned.

It is, in fact, impossible to find any label for her and there are few thinkers to whose work it is more difficult to do justice in a summary. Her knowledge covered a prodigious area—from philosophy, history, art, and the classics to psychology, mathematics, and political and social theory. Her political thought has recently been ably studied by Professor Roy Pierce in his *Contemporary French Political Thought*,[2] and similar studies of her work in other fields would be equally fruitful. Her essays on science, although they deal with subjects outside the scope of the average layman, are always lucid and readable; and they contain many self-explanatory passages which might well be dis-

[1] *The Need for Roots* (Routledge, 1952), p. 43.
[2] Oxford University Press, 1966.

played in letters ten feet high in all public places. For example the passage on pp. 63–64 about the results of the loss of 'the idea of truth':

> In the present crisis there is something compromised which is infinitely more precious even than science; it is the idea of truth, which had been very closely associated with science in the 18th century, and especially in the 19th. The association was very erroneous but the habit has persisted with us. The disappearance of scientific truth appears to our eyes as the disappearance of truth, thanks to our habit of mistaking the one for the other. So soon as truth disappears, utility at once takes its place, because man always directs his effort towards some good or other. Thus utility becomes something which the intelligence is no longer entitled to define or to judge, but only to serve. From being the arbiter, intelligence becomes the servant, and it gets its orders from the desires. And, further, public opinion then replaces conscience as sovereign mistress of thoughts, because man always submits his thoughts to some higher control, which is superior either in value, or else in power. . . . It is as though we had returned to the age of Protagoras and the Sophists, the age when the art of persuasion—whose modern equivalent is advertising slogans, publicity, propaganda meetings, the press, the cinema, and radio—took the place of thought and controlled the fate of cities and accomplished coups d'état. So the ninth book of Plato's *Republic* reads like a description of contemporary events.

I have tried to reproduce Simone Weil's Greek translations as accurately as possible. Being made for her own use, her translations are in one or two places rather condensed, but they are as clear and simple as was compatible with a strict concern for accuracy.

Bibliographical information on all the essays is given in headnotes. The essays in the first half of the book appeared in *Sur la science* (Gallimard, Paris, 1966).

I could not have completed the translation of the science articles without the help of Miss K. M. M. Goggin's knowledge and literary expertise. I am also indebted to Mlle Simone Pétrement, Professor André Weil, and Dr. G. J. Whitrow for advice and information; and to Dr. Whitrow also for reading the proofs of the science essays. But none of these generous helpers is responsible, of course, for any errors I may have fallen into in spite of their efforts.

PART I

As comedy, no dialogue of the deaf can compare with the polemic between the modern mind and the Church. The unbelievers select as arguments against the Christian faith, in the name of the scientific spirit, truths which are indirectly, or even directly, manifest proofs of the faith. Christians never perceive this and they make feeble attempts, with a bad conscience and a distressing lack of intellectual probity, to deny those truths.

The Need for Roots (*Routledge, 1952*) *p. 248*

One could count on one's fingers the number of scientists in the entire world who have a general idea of the history and development of their own particular science; there is not one who is really competent as regards sciences other than his own. As science forms an indivisible whole, one may say that there are no longer, strictly speaking, any scientists, but only drudges doing scientific work. . . .

Oppression and Liberty (*Routledge, 1958*) *p. 13*

1 *Classical Science and After*

French title: *La Science et nous*. This unfinished essay was written at Marseilles early in 1941. In a letter of 30 May, 1941, she mentions that other work has prevented her from continuing it.

To us, men of the West, a very strange thing happened at the turn of this century; without noticing it, we lost science, or at least the thing that had been called by that name for the last four centuries. What we now have in place of it is something different, radically different, and we don't know what it is. Nobody knows what it is. About 1920 the great public became aware of something peculiar, in connexion with Einstein, and it admired, of course, for is it not well established that our century is admirable? But there was nothing for the theory of relativity to upset, because the quantum theory had already upset everything round about 1900. Moreover, no matter how bizarre we may find the application of a non-Euclidean geometry, and the curvature of space, and time regarded as a dimension, and a velocity that is at once infinite and measurable, there is nothing new or strange in the notion which has given Einstein's theory its name: the idea that motion and rest have meaning only in relation to a given system of reference. This idea is to be found in Descartes and, if it was rejected by Newton, he did not reject it as a patent absurdity. But quanta of energy are a very different matter.

There are two ways in which the quantum theory marks a break in the evolution of science. First, it marks the return of discontinuity. So far as is known, number was at first the only subject to be treated mathematically; its study had been carried so far that a Babylonian adolescent of 4,000 years ago knew about as much algebra as a French *lycée* student today, but the algebra consisted of numerical equations. And, moreover, the way in which certain problems are stated—one of them refers to the sum of two numbers of which one is a number

of days and the other a number of workmen—seems to indicate that algebra was then what it is today also for certain minds, a manipulation of purely conventional relationships and not a way of knowing the world; the world never provides data of this kind.

So far as is known, it was in Greece in the sixth century that the method of mathematics began to be applied to the world instead of to number alone, and this was done by taking the continuous as its object. That this change of object was consciously made by the Greeks is indicated by the fact that until a very late period, until Diophantus, they always affected to know nothing of algebra and its equations; they admitted algebraic relationships only in the guise of propositions of geometry. In the *Epinomis* geometry is defined as 'the assimilation to one another of numbers not naturally similar, an assimilation made evident thanks to the properties of plane figures'. This is to define it as the science of generalized quantity or number,[1] whether expressible or not in numbers and fractions. The expression 'similar numbers' seems to indicate that for the Greeks the construction of similar triangles, which is the foundation of geometry, was a method of seeking proportions, and doubtless the construction of the right-angled triangle, a combination of similar triangles, was a method of seeking geometric or proportional means; perhaps for the Greeks proportion was the motive of geometrical studies, because most of their discoveries can be grouped around two problems: the search for a proportional mean between two numbers and the search for two proportional means between two numbers. Plato worked towards the solution of the latter, and he continually celebrated the solution of the former with singular exaltation.

In any case, by the beginning of the fourth century the Greeks possessed a complete theory of generalized number, in the most rigorous form, and a perfectly precise conception of the integral calculus. Since the lines represented by geometrical figures are always at the same time trajectories of movements, their geometry constituted for them a science of nature—'God is ever a geometer'. For the Babylonian algebraic equation there was substituted the notion of function, the soul of all scientific knowledge. The use of letters to represent, not simply any integers or fractions, but any numbers in the sense of generalized values, enabled the Renaissance to preserve, together with the Greek heritage, the Babylonian as transmitted through Diophantus, the Hindus, and the Arabs; the form of the equation served to express the function, and this led directly to the differential and the integral calculus; and the algebra created by the Renaissance, the modern equivalent of Greek geometry and expressing, like it, combinations of continuous magnitudes analogous to distances, performed the same instrumental role for acquiring knowledge of nature. Fourier's series in the theory of heat are a brilliant example of it.

[1] Throughout this book, Simone Weil's expression '*nombre généralisé*' has been translated as 'generalized number'.

But the human mind cannot make do with number alone or with continuity alone; it oscillates between the two. And there is something in nature which corresponds to each of them, for otherwise man could not exist as he is, with a mind which thinks always in terms both of number and of space. In the course of and especially towards the end of the nineteenth century the discontinuous reimposed itself upon scientific thought in all branches of science. In mathematics: groups and everything that proceeds from them, the extension of arithmetic and its new relations with analysis; in physics: atoms, the kinetic theory of gases, quanta; in chemistry: all its laws; in biology: mutations. These are so many signs of the return of science to the discontinuous. There is nothing in the least unnatural in this return, which is a phase of the necessary balancing of two correlated ideas. But what is, without exaggeration, contrary to nature is the use of the discontinuous in contemporary physics, when energy, which is purely a function of space, is divided into atoms. With that, what was still called science in 1900, but must now be called classical science, disappeared, for it has been radically deprived of meaning.

Scientists between the Renaissance and the end of the nineteenth century were not working simply to accumulate experiments; they had an objective; they were trying to find a way to represent the universe. The model for this representation is work, or more exactly, the crude elementary form of work, into which practice, knowledge, skill, and inspiration do not

enter. In other words, manual labour. Between any desire and its satisfaction we are faced with a distance which is, in a sense, the world itself; if there is a book on the floor and I wish to see it on the table, my wish can only be satisfied by lifting the book through the whole distance which separates the table from the floor. If we consider a horizontal plane between that of the table and that of the floor, then in no case, whatever may happen, no matter what event may occur among all the infinity of possible ones, will the book be on the table without having passed through this plane. I can avoid the weight of the book by tearing out the pages and lifting them one at a time; but I shall have to repeat the process as many times as there are pages in the book. And if, in place of me, there is an idiot, a criminal, a hero, a sage, or a saint, it will make no difference. The totality of geometrical and mechanical necessities to which the action is always subject constitutes the primal curse which fell upon Adam, which makes the difference between the world and an earthly paradise, the curse of labour.

Classical science, the science which was revived by the Renaissance and perished around 1900, tried to represent all phenomena occurring in the universe by imagining, between two successive states confirmed in a system by observation, intermediate stages analogous to those traversed by a man executing a simple manual labour. It conceived the universe on the model of the relation between any human action and the necessities which obstruct it by imposing conditions. There is no question, of course, of imagining any sort of wills at work behind the phenomena of nature because these would not be analogous to human wills; being unattached to bodies, and supernatural, they would be exempt from the conditions of work. Therefore, in order to establish the analogy between the phenomena of nature and work it is necessary to eliminate one of the terms by which work is defined and without which it cannot be conceived. It is true that the law of work which rules human life is the law of indirect action, by which each stage of execution is independent of the preceding and the following stage, and indifferent to the motive and the hoped-for result; if I want to raise a very heavy stone I shall succeed by lowering and not by raising something, provided that something is a lever. Through this chain of intermediate stages, which are

foreign to my desire, I touch the world, and I conceive it on the model of such a chain of intermediate stages, but each of them is a pure intermediary which makes no link with anything. Or at least I try to conceive it so, but I cannot quite succeed in imagining work with no worker, an obstacle which opposes nothing, conditions which do not condition any undertaking. That is why there is an impenetrable obscurity, as a glance at any textbook suffices to show, in the simple, fundamental notions of mechanics and physics: rest, motion, velocity, acceleration, mass at one point, system of bodies, inertia, force, work, energy, potential.

Nevertheless, classical science in the end was able to subsume the study of every natural phenomenon under the simple notion of energy, which was directly derived from that of work. This was only achieved after long effort. Lagrange, relying on the discoveries of the Bernoullis, d'Alembert, and others, and by means of the differential calculus, succeeded in defining by a single formula all possible states of equilibrium and movement of any system of bodies exposed to any forces, a formula based solely on distance and force—or, which comes to the same thing, mass and velocity—that is to say, on something analogous to weight; from which Maxwell concluded, by a flash of genius, that, if we can imagine one mechanical model of a phenomenon, we can imagine an infinite number of them. It is thereby implied that all of them have equal explanatory value. And it then follows that there is no need to imagine even one; it is enough to establish the possibility of imagining it. The method for doing this is provided by the notion of energy—function of distance and force, or of mass and velocity—as common measure of all work, that is to say, of all transformations analogous to the raising or dropping of a weight; the basic formula of dynamics states that when a system passes from one state to another the variation of this function is zero, provided that no external force has acted on the system. If a formula of this kind can be applied to any phenomenon it establishes the fact that it is possible to imagine a mechanical model for this phenomenon. Thus one can dispense with intermediate stages and state simply that the relationship between two successive experimentally observed states of a system is identical or equivalent to the relationship between the starting point and the

completion of a human labour; and for all species of phenomena it is sought to establish numerical equivalents between certain measurements made in the course of experiments, on the one hand, and, on the other, the distances and weights which have to be overcome in human labour. The notion of work is always present because energy is always measured in distances and weights; and although force is a function of mass and acceleration, and not something similar to an effort, the place occupied by acceleration in the formulae is derived from the constraint exercised by gravity upon all human action. The science of the nineteenth century consisted in determining, for various species of phenomena, numerical equivalents to distance and weight, as Joule was the first to do, in the case of heat.

But nineteenth-century science did something else as well; it invented a new idea by translating, so as to apply it to energy, that necessity which, together with work, weighs most heavily upon human life. It is a necessity connected with time itself and it consists in the fact that time has a direction, so that it is never in any circumstances a matter of indifference in which direction a transformation takes place. We experience this necessity not only in the process of growing older, which slowly but unceasingly compels us, but also in the events of every day. It sometimes requires almost no time or effort to knock a book off a table, disarrange some papers, stain one's clothes, crumple some linen, burn a field of wheat, or kill a man; but it takes time and effort to lift a book, put papers in order, clean one's clothes, or launder linen; and it requires a year of labour and trouble to raise a new crop in the field; a dead man cannot be brought back to life, and it takes twenty years to replace a man in the world. This necessity, by which we are rigorously bound, is reflected in the social constraint which gives power to those who know how to burn fields and kill men, things which are quickly done, over those who know how to raise crops and bring up children; things which take time. But this necessity finds no expression whatever in space, in which all directions are indifferent. Nor is it expressed in weight, for the weights in dynamics are elastic and they never fall without rebounding; they have to do so, in order to express the essential necessity of human labour which the physicist transfers to the whole of

nature: namely, that nothing in the world is exempt from it. But it then becomes necessary, in order to express what is the condition of all human action, to add something to the notion of energy as defined by distance and weight. It has to be added that every transformation has a direction, which is not a matter of indifference. But this has to be expressed in an algebraic formula, in the language of mathematics applied to physics. This was achieved by Clausius, who thus invented what is known as entropy.

It is assumed that every phenomenon involves a transformation of energy such that, once the phenomenon is accomplished, it is impossible by any means or in any conditions to restore the initial state exactly as it was throughout the system. This principle is expressed by imagining a quantity which, in every system in which a change occurs, increases continually, unless external factors intervene; the only exception is for purely mechanical phenomena, unaccompanied by a rise or fall of temperature, but none such exist. The discovery of an algebraic formula for this quantity is the most complete triumph for the concept of limit, which was formerly discovered by Eudoxus at the same time as the integral calculus; for it is only a question of limits. Since it is a question of variations connected with those of heat, a case is sought for, which is of course an impossible case, in which a phenomenon occurs without any addition or subtraction of heat and in which nevertheless temperature plays a part; this case is found in perfect gases, which do not exist, but which, contrary to existing gases, can expand without change of temperature and which—by an infinitely slow compression obtained by means of a pressure equal to that of the gas (an obvious impossibility), by equating to zero a differential formula and then by integrating—provide a function of temperature and volume which, being constant, corresponds by hypothesis to entropy. The increase of entropy is a function of the increase of energy, of the increase of volume, and of the pressure, the temperature, and the mass; or again, it is proportional to the mass and to the ratio of the heat supplied to the temperature. Further calculations make it possible to apply the notion of entropy to gases which exist. Such was the culmination of classical science, and it seemed to justify the belief that it would be possible, by calculation, measurement, and

numerical equivalence, to read throughout all the phenomena occurring in the universe simple variations of energy and entropy, conforming to a simple law. The prospect of such a triumph might well be intoxicating. Soon after came the catastrophe.

The grandeur of this enterprise of four hundred years is incontestable. Our simplest actions are ruled by a necessity which, when we relate it to all things, presents the idea of a world so totally indifferent to our desires that we feel how very nearly nothing we are. By conceiving ourselves, if one may so express it, from the point of view of the world, we attain to that indifference about ourselves without which there is no deliverance from desire, hope, fear, and becoming, without which there is no virtue or wisdom, without which one lives in a dream. An eclipse is a nightmare for the man who does not know that the sun's disappearance in the eclipse is analogous to its disappearance when he puts his hand over his eyes; when he knows it, the eclipse is simply a fact. The purifying effect of the contemplation and experiencing of necessity is sufficiently conveyed in some marvellous lines of Lucretius; misfortune endured in the right way is a similar purification; and classical science, too, is a purification if it is rightly used. It tries to read behind all appearances that inexorable necessity which makes the world a place in which we do not count, a place of work, a place indifferent to desire, to aspirations, and to the good. The sun which it takes for an object of study shines indifferently upon the unjust and the just.

Yet one cannot regret its passing, because it is intrinsically limited. To begin with, it is limited and even meagre in interest, it is terribly monotonous, and once the principle has been grasped, that is to say the analogy between the events of the world and the simplest form of human work, it has nothing new to offer, no matter how long it goes on making discoveries. These discoveries confer no new value upon the principle. They draw all their value from it. Or if it does acquire greater value from them, it is only in so far as it is really comprehended by a human mind at the moment of a discovery, because the act by which a mind suddenly begins to read necessity behind appearances is always admirable; for example, Fresnel reading

necessity in the fringes of light and shade, by analogy with the undulations of water. In the same way, the scientific attitude of mind is only admirable in a man who is at grips with events, dangers, responsibilities, emotions, and perhaps terrors; in a ship or an aeroplane, for example. On the other hand, nothing is so dreary and empty as the accumulation of scientific findings, as a dead residuum, in books. An indefinite accumulation of works of classical physics is not desirable.

Nor, indeed, is it possible; classical science is limited in range because the human mind is limited. Men are different from one another; but even the most gifted human minds cannot embrace an unlimited number of facts clearly conceived; and yet there can be no synthesis of facts except as conceived by a single mind; there can be no synthesis between a fact in my mind and a fact in my neighbour's mind, and although both my neighbour and I may be thinking two the result will never be four. Now every theory in physics is a synthesis whose elements are facts which are conceived as being analogous to one another. And since the facts accumulate with each passing generation of scientists, while the capacity of the human mind remains the same, the quantity of facts to be embraced comes to exceed by far the range of any mind; hence the scientist no longer has facts in his mind, but the syntheses evolved from the facts by other minds, syntheses which he in turn synthesizes, without having revised them. This operation is the less valuable, the less interesting, and the less likely to succeed, the greater the distance between the thought and the facts. So there was a progressively paralysing factor in classical science which was bound to kill it some day.

But even if it did embrace the entire universe and all phenomena, classical science would still be limited; its account of the universe would be only a partial one. The universe it describes is a slave's universe, and man, including slaves, is not wholly a slave. Man is indeed that creature who, if he sees an object on the floor and wants to see it on the table is obliged to lift it; but he is also, at the same time, something quite different. And the world is indeed that world which sets a distance, laborious to cross, between every desire and every accomplishment, but it too is at the same time something quite different. We know for certain that there is something quite

different, without which we should not exist. It is true that the matter which constitutes the world is a tissue of blind necessities, absolutely indifferent to our desires; it is true, too, in a sense, that they are absolutely indifferent to spiritual aspirations, indifferent to the good; but also, in another sense, it is not true. For if there has ever been real sanctity in the world, even if only in one man and only for a single day, then in a sense sanctity is something of which matter is capable; since nothing exists except matter and what is inscribed in it. A man's body, and therefore in particular a saint's body, is nothing else but matter and is a piece of the world, of that same world which is a tissue of mechanical necessities. We are ruled by a double law: an obvious indifference and a mysterious complicity, as regards the good, on the part of the matter which composes the world; it is because it reminds us of this double law that the spectacle of beauty pierces the heart.

Nothing is more foreign to the good than classical science, which makes the most elementary form of work, slave labour, the very principle of its representation of the world; it finds no place for the good even by way of contrast, as an opposing term. It can perhaps be explained why it was only in the last four centuries and only in the little peninsula of Europe and its American extension that men have ever taken the trouble to develop a positive science. The reason is that men at other times and places have been more concerned to comprehend the secret complicity of the universe in respect of the good. There is a great appeal in this, but also a great danger; because man may easily confuse the aspiration for the good with his own desires; this impure compound is precisely what sin is; so in the attempt to grasp the world of values instead of the world of necessity there is a risk of encouraging the most dubious elements in oneself. But if this danger can be avoided, the attempt is perhaps far superior to that of positive science as a method of purification. Evidently, it cannot furnish a communicable system of knowledge in the manner of science; one has only to reflect that every scientific study of natural phenomena, however abstract, is so conducted as to lead in the end to a collection of technical prescriptions or recipes, whereas a sage, a great artist, or a saint never possesses a recipe, even for his own use, and still less for other people, although each of them

possesses a method for giving existence to the good which is the object of his aspiration. The results arrived at by trying to conceive the universe, the human body, or the human condition in relation to the good can, perhaps, only be expressed in the language of myth and poetry and image; the images consisting not only in words but also in objects and actions. The choice of images may, of course, be either more or less happy. The happier choices always contain some sort of mystery. The medieval ordeal, for example, with its fire that will not burn and its water that will not drown the innocent, is an image of this kind; a clear one, though very crude. Alchemy, in the same period, was a mysterious and a more exalted image; alchemists have been thought of as the precursors of chemists, but this is a great mistake, because they considered the purest virtue and wisdom to be necessary for the success of their operations, whereas Lavoisier sought a formula for combining oxygen and hydrogen into water which an idiot or a criminal could make use of as easily as himself. It has been of the essence of all civilizations, except the modern European, to elaborate images of this kind.

Among all the ways, other than positive science, of seeking knowledge, Greek science is a mystery for us, in spite of its marvellous, unequalled clarity. In once sense, it is the beginning of positive science and, at first sight, the destruction of Greece by war was responsible only for an interruption of seventeen centuries and not for a change of orientation. The whole of classical science is already contained in the works of Eudoxus and Archimedes. To Eudoxus, the friend of Plato and pupil of one of the last authentic Pythagoreans, are attributed the theory of generalized number and the invention of the integral calculus; he invented the combination of circular and uniform movements carried out on the same sphere but around different axes and at different velocities, so as to furnish a mechanical model which accounted perfectly for all the astronomical facts known in his day. The idea of the same moving body carrying out at the same time several different motions whose resultant is a particular trajectory is the very basis of kinetics and is necessary for the conception of a combination of forces; all we have done since is to substitute linear for circular motion and to introduce acceleration. That is the sole difference

between our conception of stellar motion and that of Eudoxus, because, although Newton said a great deal about force of attraction, gravity is no more than uniformly accelerated motion in the direction of the sun. Archimedes was the founder not only of statics but of the whole of mechanics by his purely mathematical theory of the balance, the lever, and the centre of gravity; and the whole of physics is contained in germ in his theory of the equilibrium of floating bodies, which is also purely mathematical and which amounts to considering a fluid as an ensemble of levers superimposed on one another with an axis of symmetry playing the part of the fulcrum. Teachers today very mistakenly reduce these marvellous conceptions to the rank of totally uninteresting empirical observations. It is true that dynamics, based on the consideration of uniformly accelerated motion, was a novelty for the sixteenth-century; but if it proved possible, due to the Bernoullis, d'Alembert, and Lagrange, to reduce the whole of dynamics to a single basic formula, this was because they reduced it so far as possible to statics by defining the coherence of a system of bodies or of mass points in motion as an equilibrium identical to that of a lever. Classical science consists in an attempt to conceive everything in nature as a system of levers, as Archimedes had done for water.

But if Greek science is the beginning of classical science it is also, at the same time, something else. All the ideas it makes use of have a haunting resonance and more than one meaning. The idea of equilibrium, for example, had always been at the centre of Greek thought; and in Egypt too, for centuries and centuries the balance was the symbol of equity, in their eyes the first of all the virtues. Implicitly in the *Iliad* and almost explicitly in Aeschylus, injustice appears as a rupture of equilibrium which must necessarily be compensated later by a disequilibrium in the opposite sense, and so on indefinitely; in a strange formula of Anaximander the same conception is applied to nature itself, so that the whole course of natural phenomena is seen as a succession of disequilibriums compensating one another, which offers a mobile image of equilibrium, just as time is the mobile image of eternity: 'As birth causes things to emerge from the indeterminate, so destruction compels them by necessity to return to it; for they render to each other

atonement and punishment for their mutual injustices in the order of time.'[1] There are a few lines in the *Gorgias*, perhaps the most beautiful, which strike the same note, where Socrates blames the advocate of injustice for ignoring that the order of the world is determined by concord and harmony, and for forgetting geometry. The idea behind such words is the same which, under the name of equilibrium, constitutes Greek physics. Archimedes had only to find a precise definition for it: or rather, two definitions—one geometrical, the other empirical. To the Greeks motion and, more generally, change appeared as disequilibrium; therefore the sign of equilibrium, for Archimedes, was immobility. On the one hand, if a system of bodies is symmetrical about an axis, it is clear that the total number of bodies on one side of the axis can exert no action upon the total number of bodies on the other side, and a symmetry of this kind constitutes the geometrical definition of equilibrium. The postulate is that, for the given systems, the two definitions coincide and that where there is repose without symmetry it is nevertheless always possible, by a sequence of rigorous mathematical proofs, to reveal a hidden symmetry. Although not explicitly stated by Archimedes, all this is clearly implied by his postulates, hypotheses, and theorems. On the other hand, the idea of equilibrium dominates every form of authentic art; and one can say the same of proportion, that central idea of Greek geometry; and as for the uniform and circular movements of Eudoxus, they recall the dance; also there is a marvellous page of the *Epinomis* on the dance of the stars, which a later Greek writer compared to the dances around the candidate for initiation at Eleusis. Just as classical science is essentially related to technology, so Greek science, although equally or indeed more rigorous, and no less concerned to comprehend necessity in all things, is essentially related to art and above all to Greek art.

Classical science takes as its model for representing the world the relation between a desire and the conditions for its fulfilment, but it suppresses the first term of the relation. This suppression, however, cannot be complete. And that is why classical science bases itself upon linear motion, which is the very image of the project and is the thought of every man who

[1] Diels, *Fragmente der Vorsokratiker*, 5th ed., I, p. 89.

desires to go somewhere, for example, or to seize or hit something or somebody; and upon distance, which is a condition inherent in every desire of a creature subjected to time. In such a picture of the world, the good is altogether absent; it is absent to the point where one cannot even find a trace of its absence; for even the deliberately suppressed term of the relation, the term which concerns man, is altogether foreign to the good. Therefore classical science is without beauty; it neither touches the heart nor contains any wisdom. It is understandable that Keats[1] hated Newton, and that Goethe did not love him either. It was quite different among the Greeks, those fortunate men in whom love, art, and science, were three scarcely separate aspects of the same movement of the soul towards the good. Compared to them, we are wretched; and yet the thing that made them great is close to our hand.

According to an admirable image of the Manichaeans, which certainly dates from much earlier, the spirit is rent and fragmented into pieces which are dispersed throughout space, throughout extended matter. It is crucified upon extension; and is not the cross the symbol of extension, being composed of two perpendicular directions which define it? The spirit is also crucified upon time, dispersed in fragments throughout time, and it is the same ordeal by rending. Space and time are one and the same necessity, sensed in two ways; and there is no other necessity. The thinking being is divided from himself, in his most animal desire and in his highest aspiration, by the distance in time between what he is and what he is tending to be; and if he thinks to have found himself, he at once loses himself again by the disappearance of the past. What he is at any single moment is nothing; what he has been and what he will be do not exist; and the extended world is made up of everything that escapes him, since he is confined to one point, like a chained prisoner, and cannot be anywhere else except at the price of time and effort and of abandoning the point he started from. Pleasure rivets him to his place of confinement and to the present moment, which nevertheless he cannot detain; desire attaches him to the coming moment and makes the whole world vanish for the sake of a single object; and pain is

[1] Perhaps Blake is meant.

always for him the sense of his thought being torn and scattered through the succession of moments and places. And yet the thinking being feels himself to be made for something other than time and space; and, since he cannot banish their presence from his thought, he feels that at least he is called upon to master them, to dwell in eternity, to embrace and dominate time, to grasp the whole extended universe at all its points at once. The necessity of time and space is opposed to this. Nevertheless, objects juxtapositioned in space and changing from moment to moment offer man an image of this lost and prohibited sovereignty. Without this, man could not live, because he can only think what he can perceive. It is because of this image that the universe, although pitiless, deserves to be loved even in moments of suffering as a fatherland and city.

In certain of the works of man this image is provided by such conceptions as limit, order, harmony, proportion, regular recurrence, by everything which enables man to embrace in a single act of thought a juxtaposition of places which is equivalent to all places, a succession of instants equivalent to all instants —as though man could be everywhere at all times, as though he was eternal. But if there is to be a true image of the way in which man wants to be able to view the world, and not a cold and empty falsehood, this act of thought must be difficult; it must seem to be on the point of completion but never quite complete; the necessity of time and space which opposes it must be even more painfully experienced even than in life's worst moments of suffering. A just blend of unity with that which opposes unity is the condition of the beautiful and the secret of art, a secret which is mysterious for the artist also. A series of sounds may be varied like the voice of a creature enslaved to emotion, subjected to change while still held by the obsession; and yet the combinations of sounds can be interlinked by regular returns which make them seem at once identical and new, so that the listener ranges through the whole series although he is bound within it; silence encloses the series at each end, defines its starting and finishing point, and at the same time seems to prolong it indefinitely. An enclosed space may be bounded by architectural limits whose modification one does not imagine and which seem to enclose a world on its own, and yet it may

evoke unlimited distances outside itself, further than the stars, in every direction; we grasp its structure almost at a glance, but it invites us to an exploration which will reveal it under innumerable different aspects. A piece of marble which seems flowing and evanescent, which looks flexible to every surrounding pressure, has assumed for ever the form of an intact human body in a pose of equilibrium which counteracts gravity and suggests the equal potentiality of every movement. The small surface of a picture encloses within well-marked limits an infinitely vast three-dimensional space in which things and creatures are both linked and separated by their reciprocal positions, and fixed in the appearance of a moment as though they were not observed by anyone or from any point of view, as though caught unsullied by any human vision through its cloud of ignorance. A poem presents characters in turn, each of whom is the listener and also something else, characters who change as they are swept along by time, which is implacably registered by the verse's metre; and yet thanks to it the past remains and the future becomes present. The whole weight of the universe, in the form of affliction, presses on all men without destroying a single man and inflects the language without breaking the metre. All these are images which touch and pierce the centre of the soul. Another such image is a human body and face which arouse not only desire but also and more strongly the fear of approaching because of the risk of spoiling them, whose decay we cannot imagine although vividly aware of their extreme fragility, and which, by almost wrenching our soul away, make it violently aware that it is nailed to a point in time and space. And the universe apart from man also provides such images.

The universe provides these images thanks to a divine favour accorded to man which allows him to make use of number in a certain way as intermediary, in Plato's terms, between the one and the unlimited, the indefinite, the indeterminate—between unity, as man is able to conceive it, and everything that opposes his attempt to conceive it. The number which acts as intermediary is not the number which enumerates nor that which is formed by continually repeated addition; rather, it is the number which applies to ratios, for a ratio between two integers, which is something completely different from a fraction,

is at the same time a ratio between an infinity of other integers suitably selected and grouped in pairs. Each ratio involves quantities which may increase indefinitely while maintaining a perfectly definite relation, just as an angle, starting from a point, embraces an area which extends indefinitely beyond the most distant stars. And, in order to imagine the ratio, one must begin with number and pass on to angle, because whole numbers do not as easily lead to ratios as they do to additions; usually they do not provide the means of expressing mean proportionals. The Greeks of the archaic period must have known this, and also the Babylonians of the year 2000, because they sought solutions for equations of the second degree, that is to say, proportional means; it can only have been the ignorant who were disturbed and shocked when, at a later period, the incommensurability of the diagonal of the square was publicly revealed in Greece. The Greeks of the sixth century founded the science of generalized number, and from then on the study of the world consisted in seeking for numbers, in this new sense of the word, that is to say, proportions. And proportions are found in the world.

Thus, instead of the relation between desire and the conditions of its accomplishment, the subject of Greek science is the relation between order and the conditions of order. The order in question is perceptible to human sense and consequently man is never absent from the relation. And yet this order can be related to the universe better than desire, project, and effort can be; Greek science was at least as much detached from anthropomorphism as classical science, whatever the conceit of the nineteenth century may have thought. In both relations, the conditions that must be defined are the same. Both classical science and Greek science are concerned with the same necessities of space and time which are at once obstacles and support for the work of an architect or of any man who creates order, and also for any other kind of work. Moreover, to conceive the conditions of an order means to conceive a constructed order, it means comparing it to those kinds of order which are the result of work; but at the same time, all efficient work presupposes a certain order in the universe and certain proportions, without which there could be neither instrument nor method. So the two relations seem to coalesce. Yet there is an

essential difference of spirit between the two sciences. The Greeks, wherever they thought they could discern an order, constructed an image of it with perfectly definite elements, conforming to necessity; if this image did not fit with their observations, the divergence implied the intervention among the phenomena of factors other than those assumed. One could not ask for greater scientific rigour. But this rigour was also poetry.

Eudoxus's definition of proportion, which constitutes the theory of generalized number, is beautiful in itself; it embraces the infinite variations to which four quantities are liable when multiplied two by two by any possible whole number, while continuing always to obey the law which makes these products larger or smaller than one another. Still more beautiful was the intuition of Thales when he perceived the sun as the creator of an infinity of proportions which are inscribed on the ground and which change as the shadows change; it was from this that the idea of variable proportion, which is function, was born. But for us, the very term of function indicates the dependence of one term with respect to another, whereas the Greeks were content to enjoy the spectacle of change as an object of contemplation. If a ship sinks lower in the water when its load is increased we see this as the effect of a force; Archimedes saw a line along the surface of the floating body as the image of the ratio between its density and that of the fluid. In the same way, a point on a pair of scales in equilibrium marked, in terms of length, the proportion between two unequal weights. It is a beautiful image—a ship supported in the sea, like the pan of a pair of scales, by a mass of sea water, on the other side of an axis, which changes without movement as the ship advances, like the shadow of a bird in flight. By speaking simply of an upward thrust the poetry—and also a great deal of precision—is lost. And although it may be easier to construct an elliptical trajectory with linear motion, susceptible to acceleration, rather than uniform circular motion, we have lost both precision and poetry by saying that the planets tend towards the sun; it is more beautiful to say that the stars describe circles and that their successive positions reflect the proportions between the radii, the velocities, and the angles which define the various circular movements inherent in them. The circle

is the image of movement which is infinite and finite, changing and invariable; surrounding an enclosed space, it evokes all those concentric circles which reach as far as the bounds of the universe; it is also, as Pythagoras with ecstasy perceived, the locus of geometric means. Circular motion obeys a law, but it has no direction; it alone is appropriate for the stars and can be attributed to them without lessening for us their power to evoke the eternal. The Greeks were right to think that its appropriateness suffices to make a hypothesis legitimate, for nothing in the world could make it more so. The blind necessity which constrains us, and which is revealed in geometry, appears to us as a thing to overcome; for the Greeks it was a thing to love, because it is God himself who is the perpetual geometer. From the flash of genius of Thales until the time when they were crushed by the armed force of Rome, they searched everywhere—in the regular recurrence of the stars, in sound, in equilibrium, in floating bodies—for proportions in order to love God.

The relation between an aspiration of human thought and the effective conditions for its realization has been, in all countries and at all times, the object, the model, and the principle of the different ways of knowing the world; this relation is sought in the phenomena of the visible world and from it is constructed an image of the universe. Both magic and classical science, for example, are concerned with the same aspiration, namely, with some kind of desire; but the conditions with which magic is concerned are rites and symbols, which are in fact conditions for the success of human actions, but which vary in different societies. Both Greek science and classical science are concerned with the same conditions, but the aim of Greek science is totally different; it is the desire to contemplate in sensible phenomena an image of the good. In what are called the traditional sciences the aspiration seems to be towards powers analogous to those which a man can effectively acquire over himself and perhaps over others by a prolonged effort of self-transformation; the conditions are mysterious. There are as many forms of knowledge of the world as there are relations of this kind conceivable by man; and the value of each form of knowledge is neither more nor less than the value of the relation which serves him as principle. Further, some of these forms are mutually exclusive while others are not. But, as for contemporary science, what is one to think? What is the

relation that serves it as principle and determines its value? The question is difficult to answer, not because there is any obscurity but because it is embarrassing to reply. The philosophic significance, the profound thought at its centre, are like the Emperor's clothes in the story; to say they do not exist is to be branded a fool and ignoramus, so it is more prudent to call them inexpressible. Nevertheless, the relation which is the principle of this science is simply the relation between algebraic formulae void of meaning, on the one hand, and technology on the other.

Twentieth-century science is classical science with something taken away. Something taken, not something added, and least of all any relation to the good, for the lack of which classical science was a desert. What has been taken away is the analogy between the laws of nature and the conditions of work, that is to say, its very principle; and it is the quantum hypothesis that has removed it. This analogy was still present in the algebraic formulae to which the description of phenomena had been reduced by the end of the nineteenth century, because each formula could be made to correspond to a mechanical device involving a relation between distances and forces, which the formula expressed. But this is not the case for a formula composed of a constant and a number; such a formula cannot express anything to do with distance. If equal weights are suspended at different heights and a pan is lifted so that it takes them up in turn as it reaches them, the variations of energy, which is a function of distance and time, can be represented by a surface bounded at each side by perpendicular straight lines, one of them mobile, and at one end by an uneven zig-zag line—in other words, they will be continuous. No matter how many mechanical devices one may try to imagine which involve discontinuity, it can never be the case that a function consisting of two variables, one of which varies in a continuous manner, will increase by successive additions of a constant quantity. Now, energy is a function of space, and space is continuous; it is continuity *par excellence*; it is the world conceived from the point of view of continuity; it is things, in so far as their juxtaposition encloses the continuous. One can think of things as discontinuous, that is to say, as atoms—though not, in fact,

without becoming involved in contradictions—but even at the price of implicit contradictions one cannot think of space in this way. If there were Greeks, as we are told, who spoke about the number of points in the segment of a straight line, it was only because they conceived number as the model of quantity, and because language will suffer anything. But to think of space as discontinuous is like thinking of continuity itself as discontinuous. Impossibilities like this are the most certain guarantee we can have for an assertion. Space is continuous. Energy is a function of space; every variation of energy is analogous to what happens when weights are dropped or lifted. Planck's formula includes the constant 6.55×10^{-27}, or more briefly, the constant h, multiplied by a number which does not denote energy. But it no longer signifies a concept other than that of energy. It plays the same part in the calculations as the classical formula signifying energy, and the classical formula is regarded as a limiting case of the quantum formula in respect of phenomena on the scale for which the quantity 6.55×10^{-27}, referred to the unit of measurement of energy, can be neglected.[1] If the relation was reversed, if the quantum formula was a limit of the classical formula, meaning would be saved; but it is not so. Now, human thought cannot conceive such a thing as an idea in relation to which the idea of the work involved in lifting a weight can be considered as a valid limit on a certain scale. Planck's formula, composed of a constant whose source one cannot imagine and a number which corresponds to a probability, has no relation to any thought. How then is it justified? Its legitimacy is based on the number of calculations, and of experiments based upon these calculations, and of technical applications based upon the experiments, that have succeeded thanks to the formula. Planck himself claims no more than this. Once such a state of affairs is admitted, physics becomes a collection of signs and numbers combined in formulae, which are controlled by their applications. After this, what

[1] I am indebted to Dr. G. J. Whitrow for the following elucidation of this difficult passage:

'Planck's formula involves the constant h, which takes the value 6.55×10^{-27} in the c.g.s. system of measurement. It is multiplied by a number denoting frequency, that is number of vibrations a second, and the product signifies energy. Classical formulae are regarded as the limiting cases of quantum formulae on the scale for which quantum effects are negligible, i.e. for states of very high quantum-number.'

can be the importance of Einstein's speculations about space and time? The letters of the formulae which he translated by these two words have no more relation to space and time than the letters *hv* have with energy. Pure algebra has become the language of physics, a language with this peculiarity: that it means nothing. A peculiarity which makes it difficult to translate.

Two new factors were responsible for this disruption of physics: the introduction of the discontinuous, and the improvement of measuring instruments, which has changed the scale of laboratory observations. Chemistry was born when the balance was able to register simple and fixed numerical ratios between separate substances which enter into combination; and this weight-measurement already implied that discontinuity and number would again become of the first importance in the science of nature. Further, it became possible, by means of apparatus, to observe phenomena of extreme smallness, by human standards, such as Brownian movement. Discontinuity, number, and smallness are enough to give rise to the atom, and the atom has returned to us, accompanied as always by chance and probability. The appearance of chance in science was a shock. People asked where it came from, and did not realize that the atom had brought it. They forgot that already in antiquity the atom was accompanied by chance, and they failed to reflect that it cannot be otherwise.

People are often misled about chance. It is not the contrary of necessity, nor incompatible with it. The truth is the opposite: chance never appears except at the same time as necessity. Suppose there are a certain number of distinct causes which produce effects while conforming to a rigorous necessity; then, if the effects appear as an aggregate with a certain structure and if the causes cannot be grouped to form an aggregate of the same structure, what we have is chance. Dice are so made that they can fall in six ways; but there is no limit to the various ways of throwing them. If I make a thousand throws, the fall of the dice will be distributed in six classes numerically related to one another. But the throws cannot be so distributed. Moreover, I never imagine that there is the slightest break in the tissue of mechanical necessities which determines every time the movement of the dice. If I make one throw I cannot foresee the result, but this is not because the phenomenon is

indeterminate. It is because I do not know all the data of the problem. But it is not this ignorance that gives me the feeling of chance. It is given solely by the image, while I am throwing, of an indefinite number of possible similar movements, whose effects are distributed in six classes. It is the same if we consider, on the one hand, the totality of the possible positions of a revolving disc and of the impulsions it may be given and, on the other hand, a small number of colours upon which a pointer may come to rest. In games of this kind the aggregate of causes has the power of the continuous, that is to say, the causes are like the points of a line; and the aggregate of effects is defined by a small number of separate possibilities. To the mind of antiquity the image of atoms immediately suggested games of chance, and quite appropriately, in spite of the differences. If I conceive an aggregate of atoms in movement, such that each movement is strictly determined, and call it the universe, and if I ask myself what the development of phenomena will be on a scale inaccessible to the eyes of observers to whom the atom is invisible, I can conceive absolutely no reason why this development should present any appearance of constancy, regularity, or co-ordination, or even why it should be possible to repeat an experiment a second time. And it is obvious that if it is impossible to repeat experiments there can be no physics. The conception of atoms immediately makes any success of physics on the human scale appear to be chance.

The link between atomic physics and the physics of perceptible phenomena can only be established by probability. Probability is inseparable from chance, and through it chance becomes an experimentally controllable conception. When I consider, in games of chance, the continuous totality of causes and the small number of categories among which the effects are distributed, I recognize that, although each effect is rigorously linked to a cause, there is absolutely nothing in the totality of causes which corresponds to those categories, and this is to recognize chance. So all the categories have an identical relation to the totality of causes, which is equally indifferent to all of them; and this is what I mean when I say that they are all equally probable. The notion of probability always implies a distribution between equal probabilities. In the case of a die with the figure 1 on five of its faces and the figure 2 on the sixth

face there are still six equal probabilities, but five of them coincide; and this is the only way in which we can conceive unequal probabilities. As to the relation of probability to experiment, it is analogous to the relation between necessity and experiment. The experiment presents an image of necessity when, by varying a cause, we obtain effects which vary according to a function; it presents an image of probability when the distribution of effects among categories becomes closer, the longer the effects accumulate, to the proportions indicated by calculation. If the experiment gives no such image, we proceed in the same way as when it gives no image of necessity; we suppose that some factors must have been omitted from the calculation.

Confronted with atoms, the task of classical science was difficult. It was necessary to imagine very small indivisible particles, whose motion was subject to the necessities of classical mechanics; and their movements had to be such that they were united by necessities to phenomena observable on a microscopic scale and also united, by probabilities rigorously calculated, to phenomena observable on a human scale and whose regular variations had hitherto been the sole subject of physics. Classical physics regards a stone, when it is lifted, as a single point describing a vertical rectilinear trajectory; in a word, it regards the whole stone as a single atom, and that is how it calculates energy. If, instead of that, one imagines the complicated combinations of movements described by the atoms of the stone and the air, one is obliged, in order to rediscover the previously calculated formula, to use the notions of chance, probability, average, and approximation. It thus becomes necessary either to establish some link between the two physics or else to abandon one or the other of them completely; or at least this should have been obvious, but it is not what happened. It has been possible to establish a link only by assuming that atoms are subject to necessities different from those of classical physics.

Since the whole of science was reduced to the study of energy, it was in this study, reduced by means of hypothesis to the molecular scale, that the strange transformation was first observed. Planck has described how it happened. He was seeking an expression for a relationship between energy and temperature; and for this purpose he considered the case in which

the conditions for exchanges of energy between bodies would depend on temperature alone, and not on the nature of the bodies. Such a case is provided, according to Kirchoff, by black body radiation, that is to say, the case of an enclosed space with a uniform temperature. Hence it was sufficient, apparently, in order to find the function that links energy with temperature, to reconstruct mathematically a particular case of black body radiation which facilitated such a reconstruction. For this purpose, Planck chose Hertzian oscillators, and his first attempt was a failure. He then sought, instead of a relationship between energy and temperature, a relationship between energy and entropy and he found that the second derivative of entropy with respect to energy is proportional to the energy. But, although this relationship was verified experimentally for short wave-lengths, it was soon discovered that for long ones this second derivative was proportional to the square of the energy. Planck easily found a formula combining the two relationships, but he was not satisfied and he wanted to reconstruct the formula. For this he adopted Boltzmann's view, namely, that entropy, in relation to atoms, is the measure of a probability; and he found for this probability the very same formula that he was trying to recover, except that two constants had to be taken into account: one of them relating to the mass of the atom, while the other was 6.55×10^{-27}, or the constant h, which was to become so famous, and which corresponded to an energy multiplied by a time. Such a constant was meaningless in terms of classical science, but 'it was only thanks to it that the fields or intervals indispensable for the calculation of probabilities could be known'; because 'the calculation of the probability of a physical state rests upon the enumeration of the finite number of equally probable particular cases through which the state in question can be realized'.

It is clear from these words of Planck that the introduction of discontinuity at this point is not the result of any experiment at all (though experimental methods must necessarily have played a part in determining the figure 6.55×10^{-27}), but is solely the result of using the conception of probability. The transition between the idea of entropy and that of probability is natural in view of the consideration that if we assume a system, isolated from external interference, which can pass from

state A to state B, but not inversely by any sequence of intermediate stages whatsoever, then state B is more probable than state A so far as this system is concerned. Now, at the very time when these ideas were being developed there also appeared chance in combination with the atom. The observation of Brownian movement showed that a fluid which, on the scale of our vision, is homogeneous and at rest is neither homogeneous nor at rest on the scale of the microscope—which is not in the least surprising. But a fluid in a state of equilibrium is perfectly defined, on the human scale, by the conditions of equilibrium, whereas we have in fact no way of defining the state of movement of this fluid on the microscopic scale. In a general way, a system that is defined on our scale is not so on the molecular scale; one is obliged to assume a system of atoms which would appear, on our scale, to resemble some given system. But, if this kind of correspondence is established, then more than one combination of atoms will correspond to a single well-defined system on our scale; and consequently, if necessity is introduced among atoms, each of these possible combinations is liable to induce, later on, a different state of the system. Thus, when once necessity has been introduced among atoms, the relation between two states of a system, as defined on our scale, is no longer a necessity but a probability; and this not on account of any hiatus in causality, but solely as an inevitable effect of the oscillation of thought between two scales, and by a process analogous to the game of dice. It was a natural movement of thought to bring together the two possibilities, one connected with entropy and one connected with atoms, which had arisen simultaneously in the scientific mind, and to regard them as one and the same probability. This assimilation was the work of Boltzmann.

The initial idea is that among atoms there are only necessities, which are purely and solely mechanical necessities, and that there are no differences of probability; from which it follows that any combination of atoms is equally probable. In considering a system, one takes a given state of that system, defined on the human scale, and the sum of all the combinations of atoms which can correspond to it; the probability of such a state is a function of this sum, and it is assumed that this probability is measured by entropy. But since the calculation of probabilities is a numerical calculation, it has to be assumed—and this is the point of rupture with classical science—that these combinations of atoms are, as it is called, discrete and that their sum is a number; thus entropy becomes the function of a number, although it was defined, when it was invented, as a function of energy, which increases when the energy assumes, at least partially, the form of heat. This is the same contradiction as it would be if we were to assume, for example, that a quantity can be defined as a function of the distance covered by a runner and that this same quantity is a function of the number of strides he takes. This is the contradiction which appears in the idea of quanta or atoms of energy; and this is what has deprived science, since 1900, of the meaning it had possessed during four centuries, without being able to replace it with any other. The rupture between twentieth-century science on the one side and classical science and common sense on the other was already total before Einstein announced his paradoxes. A velocity which is both infinite and measurable, a time which is assimilated to a fourth dimension of space, these things are no more difficult to conceive than a quantum of energy; they are all equally impossible to conceive, although very easy to formulate either in the language of algebra or in common speech.

Was it inevitable that science should take this direction—if indeed one can speak of direction when, on the contrary, it is no longer directed at all? It seems by no means obvious. Since it was because the calculation of probabilities is numerical that the continuity of science was broken, it is difficult at first sight to understand why some more work was not devoted to the calculation of probabilities, before allowing physics to be disrupted. It is possible to conceive probabilities which are neither whole numbers nor fractions. Supposing, for example, that a disc with a pointer is revolved against a fixed circumference of which one arc is coloured red, then the probability that the pointer will stop on the red will be measured by the ratio of the arc to the circumference, a ratio which may very well not be a fraction. So it is easy to imagine a calculation of probabilities based not upon numbers but upon generalized number. In order to apply such a calculation to Boltzmann's theory it would have been necessary to imagine a continuous

assembly of combinations of atoms corresponding to a definite system on our scale and to find the means to make a value, analogous to a distance, correspond to this assembly as compared with other assemblies of the same type. At first sight, this does not appear impossible. Was there an attempt to work out such a theory, and did it fail? If so, what was the cause of failure? Or did it never even occur to anyone to try, in spite of the extreme simplicity of the idea? In any case, there is no doubt that this is the crucial point for any critical examination of the quantum theory; and there is no doubt, either, that Planck was able to write a whole book, recently translated into French,[1] about the relation between contemporary science and philosophy, without making even the most distant allusion to it.

Although the idea of the good was absent from classical science, nevertheless so long as the intelligence at work in science was simply a more refined form of that which develops the ideas of common sense, there was at least some connexion between scientific thought and the rest of human thought, including the thought of the good. But after 1900 even this so indirect connexion was lost. Men who called themselves philosophers, being weary of reason—no doubt because it is too exacting—rejoiced at the idea of a clash between reason and science; and needless to say their verdict was unfavourable to reason. What particularly delighted them was the thought that a simple change of scale effects a radical transformation of the laws of nature, whereas reason requires that a change of scale should alter magnitudes but not ratios between magnitudes; or again they were happy to believe that necessities which had long been regarded as obvious become mere approximations when more efficient instruments enable us, thanks to the atom, to enter further into the structure of phenomena. Their joy was not only impious, being directed against reason, but it also showed a peculiarly dense incomprehension. The study of atoms corresponds in science not only to a change of scale but also to something quite different. If we imagine a little man, similar to ourselves, of the size of an atomic particle, living among atoms, this little man would, by hypothesis, be sensitive to heat

[1] See page 56 below.

and light and sounds at the same time that he perceived and performed movements; but in the atomic world as conceived by physicists there are only movements. In passing from our world to the atomic world there is transformation, among other things, of heat into movement; and to our senses there is a difference not of degree but of kind between movement and heat. There is also a difference in kind between heat and movement in respect of the conditions of human work. Not only can we never hope when we make an effort to obtain by any method whatsoever a greater result than the effort warrants—this hope is forbidden by the principle of the conservation of energy—but we cannot even hope to obtain the full result that the effort warrants. Whenever we make an effort in the world there is wastage, and the wasted effort—origin of the notion of entropy—is registered by an increase of heat; and for us there is a difference in kind between the wastage and the useful work; for example, the difference for a workman between his tools getting hot and the fabrication of manufactured articles. It is because there is only movement, and not heat, in the purely theoretical world of atoms that entropy has no meaning in that world, considered by itself; and this is why, in order to give it meaning in relation to that world and our world when considered together, it was necessary to introduce the probability which destroyed classical physics. It was not the change of dimensions that was responsible, but the attempt to define entropy, which is a notion essentially alien to movement, by movement alone.

But in any case a change of scale must inevitably have a disrupting effect in physics, on account of the role played by the notion of the negligible. This notion is passed over rapidly, as if repressed out of embarrassment, when general statements are made in physics. Not only do physicists neglect the negligible, as they ought to do by definition, but they are also inclined to neglect, even when they are making use of it, the very notion of the negligible—which is in fact, very precisely, the essential thing in physics. The negligible is nothing other than what has to be neglected in order to construct physics; it is not by any means what is of no importance, because what is neglected is always an infinite error. What is neglected is always as large as the world, exactly as large, because the

physicist neglects the whole difference between something that happens in front of his eyes and a perfectly closed, perfectly definite system which he conceives in his mind and represents on paper by symbols and signs; and this difference is the world itself, the world which presses around every morsel of matter, and filters into it, and inserts infinite variety between two points no matter how close together, the world which makes any closed system absolutely impossible. The world is neglected because it has to be; and, since mathematics cannot be applied to phenomena at a lesser price, it is applied at the price of an infinite error.

There is already an infinite error implied in mathematics, in so far as it has need of objects or images. If I see two stars I think of a straight line joining them—the purest possible line, because it is not drawn; but the two stars, larger than our world, are far from being points. By pressing a chalk against a blackboard I obtain—for this time it is not a question of scale—something that differs abysmally, infinitely, from a straight line. And yet it is something not unrelated to a straight line. The relation consists in this: that the chalk on the blackboard allows me to imagine a straight line; and it is only in this sense that figures can be images of geometrical ideas, not because they resemble them, but in so far as they allow us to imagine them. That is all that is meant when one says of a little chalk dust that it is more or less a straight line. Now, in a sense, an observation or an experiment are for a physicist exactly what a figure is for a geometer. Plato, who knew that the straight line of geometry is not the one that is drawn, knew also that the stars which describe circular and uniform movements are not the ones we see at night; and Archimedes, who had read Plato, certainly knew without having needed to observe Brownian movement that no fluid in nature is homogeneous or at rest; he knew too that the beam of a pair of scales is matter and is not a straight line. In our day too entropy has been calculated from the relation between energy, volume, and temperature in perfect gases—so called because they do not exist. When a geometer studies a problem, he conceives a system perfectly defined by certain elements—positions, distances, angles—with which he himself has endowed it; he draws a figure which enables him to imagine these elements; if, at the same time,

it suggests to his imagination something which he has not put into it, he either abstracts that thing or else he re-draws the figure; but in no case does he allow himself to imagine anything other than what he himself has put into it, and which can be expressed in a few phrases. In the same way, when a physicist studies a problem he conceives a perfectly definite, perfectly closed system and allows nothing to enter it except what he has put there, and which can be expressed in a few phrases. Often, he represents his system in the manner of a mathematician, by figures and formulae; but he sometimes represents it by objects, and that is what is called making an experiment. His system sometimes does and sometimes does not contain a factor of change. In the first case it is by the mediation of necessity that the physicist, in his mind, conducts the system defined by himself from an initial to a final state; and he seeks an experimental device whose initial state imitates at first the initial state of the closed system, as a triangle in chalk imitates the triangle of theory, and whose transformation will then have the same relation with that of the closed system. If, on the other hand, he is dealing with a state of equilibrium, the experimental device must be immobile. Naturally, the experiment sometimes succeeds and sometimes not.

In case of failure, the physicist can modify his experimental device so as to make it a better imitation of the system in his mind, just as a geometer rubs out a figure and draws it again more carefully; after which, once again, he will either succeed or not. It may also happen that he considers his system impossible to imitate by means of objects, so he will develop a slightly different one which he hopes will assist him towards a result of the same kind; and in elaborating it he will of course take account of his previous setback. But the method is always the same; the experimental device is always an imitation of a purely theoretical system, even in the case where the system has been reconstructed after a setback, in the light of experiment. It cannot be otherwise; there is no other way of conceiving necessity. For necessity is essentially conditional; it is only revealed to our minds through a small number of distinct and perfectly definite conditions. Now, only man himself can propose to himself, in his mind, as hypotheses, a particular number of perfectly definite conditions; because the conditions

which the world in fact imposes upon his action are unlimited and can neither be enumerated nor expressed, and that is why he must always be prepared for surprises. The fact is that to give oneself a perfectly closed system, which nothing is allowed to enter, with a limited number of perfectly definite conditions, and then to try to see what necessities and what impossibilities it reveals, is to practise mathematics. The mathematical method, to whatever object it may be applied, is nothing but this; and consequently, to the full extent that the notion of necessity plays a role in physics, physics is essentially the application of mathematics to nature at the price of an infinite error.

But when one has understood that the lines drawn by the geometer and the objects of the physicist's observation or experiment are imitations of mathematical ideas, one has still learned very little. One still does not know what that relation is which for want of a better term is described as imitation. I press a piece of chalk against a blackboard twice in succession, each time what I get is something other than a straight line, other and infinitely different, and yet it seems to me that the first time I get roughly a straight line and the second time roughly a curve. What constitutes the difference between these two chalk marks? The geometer, being interested in straight lines, can leave this question aside, but the physicist cannot, because he is interested, not in the closed systems which he constructs in his mind with the help of symbols and figures, but in the relation between these systems and the things in the world. This relation is impenetrably obscure. If we consider the simplest example, the straight line, we find that what makes a man think of it is directed movement, that is to say, the project of movement; the sights that suggest a straight line to him are a point, that is to say, a place, if he thinks of going there, or two points, if he thinks of a path leading from one to the other, or of the mark left by a movement traced by a mind thinking of a straight line—a mark of chalk on a blackboard, of pencil on paper, of a stick in the sand, or any other mark. It is because the man who pressed the chalk on the blackboard was thinking of a straight line when he did it that the sight of the chalk mark leads the man who sees it to think of one. This kinship between movement and sight, which is the foundation of perception, is a mystery; to be touched and stirred by this mystery it is

sufficient to contemplate certain drawings by Rembrandt, for example, or Leonardo.

This is not the only mystery connected with the straight line; there are others, all of them impenetrable, and they admit of no clarification beyond stating them and distinguishing between them. We are aware, each time we think of them, that the pure straight line, the pure angle, the pure triangle, are the work of an effort of attention in detaching itself from sensible phenomena and acts; and so it seems to us that these conceptions come from out of our own minds; but the necessities and impossibilities which are attached to them and which impose themselves on our minds, whence do *they* come? For example, the impossibility of counting the points in a straight line, or the impossibility of joining two points by more than one straight line. We may refuse to admit some of them, as has been done for the latter but as no one has dared for the former; but even for the profoundest mathematician the non-Euclidean geometries are not on the same level as the Euclidean; we believe in the latter even in spite of ourselves, whereas we cannot quite believe in the others and are obliged, in elaborating them, to imagine curves when we speak of straight lines. Secondly, the effort of attention necessary to detach oneself from objects and think of a pure point or straight line or angle can only be achieved with the help of objects, and the chalk crumbled or the sand hollowed by a human movement, or some other objects, are indepensable aids. And, further, it is not just any object that can help us to imagine any idea; among those ideas which we form by detaching ourselves from objects our imagination finds links between a certain particular object and certain particular ideas. Finally, when we see a place and want to go there, we set off with the thought of a direction, that is to say, of a straight line; and, although we knowingly make a number of movements infinitely different from a straight trajectory, we arrive more often than not at the place we want. A branch tossed by the wind bends a little, but it still suggests to me a straight line in relation to the angle. If I break it off, insert one end beneath a stone, and press on the other end to raise the stone, it is still with the thought of the straight line in relation to the angle; and, although there is nothing in common between the branch of a tree and a straight line, and I know it,

I am often successful. The purity of mathematical ideas, the necessities and impossibilities which are attached to them, the indispensable images of these ideas which are furnished by objects which do not resemble them, the success of actions performed by confusing, in voluntary error, the objects with the ideas they image—each of these is a distinct and irreducible mystery, and if we find a solution for one of them we do not diminish but, on the contrary, we deepen the impenetrable mystery of the others. For example, if we admit that geometrical relations really are the laws of the universe, we make it more astonishing than ever that actions should be successful which are regulated by a deliberately and infinitely erroneous application of those relations; and if, on the other hand, we admit that they are mere epitomes derived from a large number of successful cases, then we fail to account for the necessity which is attached to them and which does not appear in an abstract epitome of them, nor for the purity which is their essence and which makes them foreign to the world; and so on. When thinking geometrically we always think that the straight line is something pure, a work of the mind, and outside the world of appearances; and that certain necessities are attached to it; and that these necessities really are the actual laws of the world; and that certain objects in the world which help us to imagine the straight line, and without which we cannot imagine it, are infinitely different from it; and that by acting as if they were straight lines our action will be effective. There is more than one contradiction here. And yet, strange to say, these contradictions, which are impossible to eliminate, are what gives a value to geometry. They reflect the contradictions of the human condition.

With a beam mounted on a support and two equal or unequal weights at the two ends, a physicist imagines a straight line turning around a fixed point, although he knows that he has neither a fixed point nor a straight line; a straight line is not something that can be bent or broken, or melted by fire. The physicist does the same with this beam as the geometer does with his crumbled chalk; he does even more. The chalk follows the geometer's hand and the chalk dust remains on the board until it is wiped off; the geometer simply makes drawings on a surface which stays unchanged, apart from his own corrections,

during the whole of his meditation. But the physicist manipulates objects in three-dimensional space and after the manipulation he leaves them exposed to change. Sometimes, when thus left, they continue to evoke the same mathematical ideas in the physicist's imagination as they did while he was manipulating them; and in that case the experiment has succeeded. This seems a strange way of describing a successful experiment; and yet it is impossible to define the relation by which objects are the images of mathematical ideas, except through the human imagination. If it were true, as has often been claimed, that what the physicist neglects in the experiment is an error which can be reduced as much as is desired, then the deliberate omission of the negligible would amount to taking a limit in the sense of the integral calculus, and the idea of the negligible would have a mathematical significance. But that is not true; it is never true, even in the most favourable cases. For example, it is not true in fact that by taking pains we can get a surface as smooth as we wish; at any given period and stage of technical development certain definite surfaces, more or less smooth, are the best that can be done in this respect, and one cannot go further; and, although we can always suppose that improved technical processes will perhaps make smoother surfaces possible some day, we cannot know. But if we consider the beam of a scales it is perfectly obvious that no technical progress will ever make it anything like a straight line turning around a fixed point. Strange as it seems, when a physicist looks at the beam of his scales, knowing that it is not a straight line but influenced by the sight of it to imagine a straight line, he is choosing to believe his imagination rather than his reason. That is what Archimedes did when he neglected the infinite difference between the beam of a scales and a straight line and invented the science of physics. And that is what we still do today. But the truth is that people did it for untold centuries before Archimedes; to be precise, ever since they first began to employ scales.

Men have always wanted to make a closed, limited, and precisely defined universe, and they have succeeded perfectly in certain games like dice, cards, and chess, in which there is an enumerable and even finite total of possibilities. In chess

there is a limited number of black and white squares and of pieces, whose movements are limited by the rules of the game; and a game of chess must end sooner or later; therefore there is a limited number of possible games of chess, although in practice its calculation would be much too complicated. The same is true, for example, for every possible game of belote. The complication is essential to the interest, and people would not play if they could in fact envisage the course of every possible match; but, although the complication baffles the human mind as if it were infinite, nevertheless it is finite; and this too is essential to the game. The player makes for himself a universe limited by fixed rules, which he imposes on his actions and which allow him, while he is playing, the choice between only a small number of possibilities; it is limited also by solid objects, which he thinks of as immutable, though nothing in the world is; but he decides to pretend that they are absolutely immutable. When this fiction is exposed from time to time by a broken chess pawn or a torn playing card, he calls that an accident and repairs it by substituting a new pawn or card which is regarded as the same as the damaged one, so that nothing is changed. Every irruption of the universe into the closed system of the game is called an accident, and the player neglects accidents. The game is therefore the model of physics. There are other games in which there is no finite number of possibilities although the aggregate of possibilities is perfectly definite. In these games generalized number plays the part taken in the previous games by number in the ordinary sense. These are ball games like bowls, marbles, and billiards in which more or less round objects are regarded as spheres and more or less smooth surfaces are regarded as planes. In these games too there is a closed system determined by solid objects whose form is considered to be immutable and by fixed rules which limit movements and possibilities, although in these games the total number of possibilities gives the effect of continuity; and accidents are neglected.

Accidents can be neglected in games, precisely because they are games. They are not so easy to neglect in work, where man is incessantly exposed to hunger, cold, fatigue, and need, where results are what matter, and where an accident destroys the results of effort and brings misfortune or death. And yet, the

idea of accident has meaning for the worker too; it is essential also for work, and, since an accident is always in a sense something neglected, or at least excluded from one's project, we may surmise that work borrowed this idea from play; and this would mean that work developed out of play and by imitation of play, an imitation whose trace is perhaps seen, more clearly than among us, in the habits of certain populations called primitive. In any case, play precedes work in every individual human life. Work is analogous to those games in which the possibilities form a continuous whole; in the same way as in games, solid objects whose form is considered immutable and whose deformation is regarded as an accident are used as an instrument for classifying and defining possibilities; and, again as in games, movements are defined by certain rules. The worker, like the player, though to a lesser degree—since he cannot at any moment efface the results of past action and return to his starting-point—lives in a closed and limited and definite world, due to the instruments and the rules of action which he has adopted. In using a spade I hold the handle, place my foot on the blade, and assume definite positions of the body in relation to the spade; I handle it with the thought of a straight line in relation to an angle; and all the various material turned by the spade falls into a series of continuous magnitudes according to the greater or less resistance each movement encounters. Again, is there anything more uncertain and varied than the sea and the wind? And yet a boat is a fixed solid upon which, through the sail and the helm, the only changes imposed take the form of continuous but perfectly definite series; only by an accident can it undergo any change not included in these series; the sailor handling the boat feels the stress of wind on the sails and water on the helm and conceives orientations, linear movements, and a straight line in relation to an angle; and the infinitely varied states of the sea and the air order themselves in definite series in relation to the state of the sails and helm and to the direction and speed of the ship which corresponds to each. All tools are instruments for ordering sensible phenomena, for combining them in definite systems; and in handling them men always think of the straight line, the angle, the circle, and the plane. These thoughts direct their action, at the price of an infinite error which they neglect.

Man is obliged to make definite systems for himself; he himself must fix the rules for his movements and construct solid objects of well defined form, instruments of play or work or, like the scales, of measurement. He finds no definite systems ready-made in nature around him, or rather, he finds only one —the stellar system. The stars are separate, distinct objects; the appearance of many of them is immutable, except for the accident of clouds; the number of them visible to the naked eye or through certain instruments is finite, though very large; the different appearances of the night sky, which correspond to the various phases of the moon and to the relative positions of the sun, moon, planets, and stars, take place in perfectly definite sequence. The appearances of the night sky form a system so rigorously defined, so thoroughly closed, so immune from accidents—except for the small accident of comets and shooting stars—that one can only find in certain games a comparably manageable ensemble of combinations; but in all games, thanks to the player's choice at every move, there is an arbitary element which is not found in the stars; while the hesitation of the player considering a move and the uncertain and variable length of the game make impossible for any game the unvarying rhythm which prevails in the sky. The stars, those marvellous, brilliant, inaccessible objects, at least as remote as the horizon, which we can neither change nor touch, and which, in their turn, touch only our eyes, are what is furthest away from us and closest to us. Alone in the universe they correspond to the human soul's first need; they are like a toy given by God to man. Divination sometimes makes use of cards, but it sometimes also uses the stars; there is a natural kinship between divination and a definite system of possibilities. And there is a natural kinship between science and systems of this kind. The stars, and games like marbles, billiards, and dice, and the common measuring instruments like scales, and simple tools and machines, all these things have always been pre-eminently the objects of scientists' meditation. But the more the stars are a fit object for science, the more they are mysterious, for this fitness is a gift, a mystery, a grace. The Greeks, who attributed circular and uniform motion to them, explained this motion by the perfection and divine character of the stars; and classical astronomy has not provided any

more positive explanation, because Newton's attraction at a distance in no way corresponds to the requirements of human thought in its search for causes. How is it conceivable that the space which separates two stars—without doubt the location, like all space, of infinitely varied events—should never determine a change in the relation between them? And in spite of the perfection of our telescopes and the delicate researches of spectroscopy, we know no more about it today; it is impossible to know more about it; the coincidence of the stars with a need of the human imagination is an irreducible mystery. Games and tools appear at first sight less mysterious because they are made by man. But the fact that we should be able to make such things and use them on the assumption that, barring accidents, they are immutable, use them while thinking, in place of them, of spheres, circles, planes, points, straight lines, and angles, and in this way use them effectively—this fact is a grace as extraordinary as the existence of the stars. It is one and the same grace and, strange to say, the object studied by science is nothing other than this grace.

In order to think mathematically, we put aside the world; and at the end of this effort of renunciation the world is given us like a bonus. It is given, indeed, at the price of an infinite error, but nevertheless really given. By this renunciation of natural objects and by this contact with reality which goes with it as a gratuitous recompense, geometry is an image of virtue. To pursue the good also we have to turn away from material objects, and we receive the world in recompense; just as the line drawn in chalk is what we draw while thinking of a straight line, so the virtuous act is what we do while loving God; and, like the chalk line, it contains an infinite error. The grace which permits wretched mortals to think and imagine and effectively apply geometry and to conceive at the same time that God is a perpetual geometer, the grace which goes with the stars and with dances, play, and work is a marvellous thing; but it is not more marvellous than the very existence of man, for it is a condition of it. Man as he is, delivered over to appearances and to sorrows and desires, and yet destined for something other, man infinitely different from God and yet obliged to be perfect like his heavenly Father, could not exist without this grace. The mystery of this grace is inseparable

from the mystery of the human imagination, the mystery of the relation which links thought and movement in man and which confronts us whenever we consider the human body. The science of nature, which is one of the effects of this grace, studies nothing, apart from the stars, except objects fashioned by human work, and fashioned according to mathematical conceptions. In a physicist's laboratory, in a museum of physics like the Palais de la Découverte, everything is artificial; there is nothing but apparatus, and upon the least feature of each apparatus how much labour, trouble, time, contrivance, and care have been lavished by men! It is not nature that is being studied there. No wonder that the scale of the human body plays a role in science which it would seem at first sight that no scale of magnitudes should play!

Physics explores the domain in which man is permitted to succeed by applying mathematics at the price of an infinite error. The nineteenth century, that century which believed in unlimited progress, and believed that men would grow richer and richer, and that constantly renovated techniques would enable them to get more and more pleasure while working less and less, and that education would make them more and more rational and that public morals in all countries would grow more and more democratic, believed also that this domain of physics was the whole universe. The goods to which the nineteenth century was exclusively attached were precious, but not supreme; they were subordinate values, but it thought it saw infinity in them. It was less wretched than our century, but it was suffocating. Affliction is better. In spite of the conceit which we inherited from the last century and which, amid all our wretchedness, we have not yet put off, it is frequently more useful to apply to an old countryman rather than to a meteorological institute if one wants to know tomorrow's weather. Cloud, rain, storm, and wind are still today very largely outside the domain where we can replace things with systems defined by ourselves; and who knows if it will not always be so? In the mid-nineteenth century, in those domains where such a substitution was possible, scientists had succeeded in establishing a certain order and coherence. This had not been achieved without much groping and effort. Though not entirely free, human thought has sometimes a certain freedom in choosing the rigorously defined

system to be substituted for the things involved in this or that phenomenon, so the choice can be made with a view to the greatest possible coherence among the various systems; up to a point, thought is free to choose what it will decide to neglect. The history of these gropings of science is to a great extent, and perhaps entirely, the history of the different and successive applications of the idea of the negligible.

2 *Variant: Meditation on Greek Science*

French title: *Rêverie à propos de la science grecque.* Date uncertain. This essay is a variant of pp. 12–14 above.

In their attempt to grasp the universe around us, men have invented many different systems of knowledge. European science before and after 1900 is two different things; Greek science is something else again; magic, technology, alchemy, astrology, are all of them systems of knowledge whose greater or lesser value one may attempt to determine by applying some criterion, but all of them have some value because each of them corresponds to a certain relation between man and the conditions of his existence. Each of them, moreover, is mysterious and impenetrable from the outside. This is as true of what is called secular science as it is of the so-called occult wisdoms. Is it possible, from the outside, to say anything serious about any of these systems? It is desirable at least to attempt to probe them.

The purpose, the model, and the principle of each of them is the relation between some aspiration of human thought and the effective conditions for realizing it; they reconstruct the whole universe according to this relation and try to decipher it in and through the world of appearances. For example, both magic and post-Renaissance European science are concerned with the same aspiration; it is the aspiration for power over nature so as to be able to realize any desire. But for magic the conditions are rites and symbols—which are indeed conditions for the success of any human undertaking, though different in different societies—whereas for classical Western science the conditions are necessities analogous to those which an effort of attention clearly reveals in the simplest kind of work, manual labour. For twentieth-century science, it is a condition to use algebraic formulae which approximately translate quantitative relations observed in laboratory experiments—these

experiments having been conceived, interpreted, and corrected according to hypotheses whose aim is the construction of such formulae. For a system like alchemy, the aspiration appears to be different from that of both magic and Western science; alchemists, according to the texts they have left, were concerned with powers over matter combined with an inner change, in the direction of wisdom and the highest virtue—analogous, therefore, to the powers possessed by a very great painter, for example, over his colours and brushes. By the nature of things, the conditions for success are mysterious because although in the quest for the good there can and must be method there cannot, as is shown by the example of art, be ready-made prescriptions. There can be as many different systems of knowledge as there are relations of this kind conceivable by man between an aspiration and the conditions for fulfilling it, and the value of each system is, precisely, the value of the relation which constitutes its principle, and neither more nor less.

Among the different ways of knowing the world, Greek science, although marvellously lucid, is an enigma for us. In one sense it is the beginning of positive science; at first sight the destruction of Greece by war seems only to have caused an interruption of seventeen centuries and not a change of orientation. The whole of classical science—if we give that name to the science of the sixteenth, seventeenth, eighteenth, and nineteenth centuries—is contained potentially, and much more than potentially, in Greek works. The theory of generalized number developed by Weierstrass at the end of the nineteenth century is identical with the theory of Eudoxus, the friend of Plato and pupil of one of the last authentic Pythagoreans, which is found in Euclid; he defined with all the precision and clarity the human soul could desire the possibility of applying arithmetical operations to quantities not assimilable to number, such as lengths. The same Eudoxus is said to have invented the integral calculus, and his definition of the conception of limit, which is central to it, and which was passed on by Archimedes, being known now as Archimedes' axiom, has never been surpassed for rigorous precision. He also invented, with encouragement from Plato, a combination of uniform circular movements which accounted perfectly for all the facts of astronomy known in his time. The conception of

several simple and definite movements so composed as to determine the trajectory of a moving body is basic in modern mechanics; it is what makes possible the translation of movements into algebraic formulae. The only difference between Eudoxus and classical mechanics is that the latter starts from linear motion, either uniform or accelerated; this alone, at bottom, separates the astronomy of Eudoxus from that of Newton because, although Newton had much to say about force of attraction, gravitation is nothing else but uniformly accelerated motion towards the sun. We ought not to imagine that the absence of algebra from Greek science proves their ignorance of what is for us the instrument *par excellence* of scientific research, because it is difficult to suppose them ignorant of the algebra taught 4,000 years ago to Babylonian students, which included equations of the second, fourth, and even the third degree. In that algebra we have only to substitute generalized for arithmetical number, and the idea of function for that of equation, and it becomes our contemporary algebra. The Greeks possessed and manipulated and applied the notions of generalized number and function, but they would never express them in the form of equations; the only symbols they would allow for algebraic relations were geometrical figures. We ought very probably to see this as a deliberate decision, connected with their general conception of science.

Their part in the development of our science is very far from being confined to mathematics and astronomy. Archimedes was the founder of mechanics, by his theory of balance, lever, and centre of gravity. And in order to obtain our contemporary mechanics it is only necessary to add to this theory and to Eudoxus' theory of combined movements the two conceptions of Galileo, uniform linear motion accomplished by inertia and uniformly accelerated motion, and the idea of work as defined by Descartes with regard to simple machines, and the idea of energy which arose from the three preceding ideas together. But if Lagrange, continuing and completing the work of the Bernoullis, d'Alembert, and several others, conferred unity upon mechanics he did it by reducing dynamics so far as possible to statics and by defining the cohesion of a system of bodies or of mass points in motion as an equilibrium identical to that of a lever. Archimedes' purely mathematical theory of

the equilibrium of floating bodies, which amounts to regarding fluids as an ensemble of superimposed levers whose fulcrum is represented by an axis of symmetry, contains potentially the whole of classical physics; the latter is nothing but an attempt to conceive everything in nature as a system of levers, as Archimedes did in the case of water. It is lamentable that these marvellous conceptions of Archimedes are taught nowadays in such a way as to seem like commonplace and uninteresting observations. As for biology, the Greeks conceived the life and health of a living being as an equilibrium—on the one hand between the parts and organs and functions which compose the body, and on the other between the body and its environment; notably, allusions can be found in Aristotle to theories concerning the analogy between the selection practised by breeders and the elimination in nature of organisms unadapted to the conditions of their environment, which is the essence of Darwin's theory. And finally, Hippocrates defined the experimental method as well as has ever been done since.

But if Greek science is already classical science it is also at the same time something quite different. Plato's famous motto, 'None enters here unless he is a geometer', is sufficient proof. What people went to Plato for was a transformation of the soul, so that it could see and love God; who today would dream of employing mathematics for such a purpose? In Christian Europe, the period when more than at any other time men sought for God, the period we call the Middle Ages, came to an end when the study of mathematics was revived; and Pascal, when he was on the point of discovering the algebraic form of the integral calculus, abandoned algebra and geometry because he desired contact with God. Today, we cannot imagine that the same man could be a scientist and a mystic except at different times in his life. If a scientist has some leaning towards art or religion it is kept absolutely separate from his main occupation, or if he tries to connect the two he does it, as we know from more than one example, by vague and significantly banal commonplaces. Similarly, during the last three centuries men concerned with art or religion have not dreamt of taking an interest in science, and, if Goethe seems to be an exception, his view of science was his own. What is the most remarkable point is that if we consider, each in turn, the scientific, artistic,

and religious ideas of the West since the Renaissance, it appears each time that Greece was the source and the model. But appearances are deceptive, because science, art, and the search for God were united for the Greeks and they are separate for us. Keats[1] hated Newton; what Greek poet would have hated Eudoxus?

If we look closely at Greek science we find ideas whose resonance is complex and whose significance is moving. This is the case with

(*Here the manuscript breaks off.*)

[1] Perhaps Blake is meant.

3 *Reflections on Quantum Theory*

This essay appeared in the *Cahiers du Sud* (No. 251, December 1942), under the anagrammatic pseudonym 'Emile Novis'.

The abyss between science as it had been understood ever since ancient Greece and the thing that is called science today was opened by two theories: the theory of relativity and the quantum theory. The first created a lot of stir with the general public while the name of the second is hardly known. Each of them dates from the beginning of the century and was subversive in the same way; that is to say, by introducing into science an acknowledged and asserted contradiction.

As regards relativity this does not apply to the general theory, which consists in extending to all possible motion the idea of relativity which classical mechanics applied only to uniform linear motion. If nothing else, this idea certainly offers very pregnant themes for reflection. Our concern is with the restricted relativity theory, which is very ill-named since it bears hardly any relation to the idea of relativity of motion. It is a very simple theory, so long as one does not try to understand it. To begin with, the work of Copernicus, Kepler, Galileo, and Newton had led to the attribution of certain movements to the earth and the various heavenly bodies; then, a series of experiments resulted in a definite measurement of the speed of light; and finally, as a result of certain experiments at the end of the nineteenth century, the speed of light came to be regarded as constant in all directions. These results are contradictory. A finite speed cannot be constant in all directions if measured by starting from a system which is itself in movement in a certain direction. Nevertheless, Einstein translated these conclusions, irreconcilable with one another, into algebraic formulae and then combined these formulae, as if they could all be simultaneously true, and derived equations from them. In these equations the letter representing

time and each of those representing the three co-ordinates of space are found to figure symmetrically. The translation of these equations into common speech has produced those paradoxes—time as a fourth dimension, for example—which have procured for Einstein a somewhat cheap reputation.

The paradox of quanta is equally or perhaps even more violent, though less striking at first sight; and it was the earlier of the two. The quantum theory, of which Planck was the original author and which is still today the principal preoccupation of physicists, bears upon the central idea of science, the idea of energy. It consists in considering energy, or rather action, the product of energy and time, as a quantity which varies discontinuously, in successive jumps, and these jumps are what is known as quanta. Now, the whole effort of science, ever since Galileo, has consisted in reducing all phenomena without exception to changes in the relationship between space and time, admitting no variable factors except distance, velocity, and acceleration. Space and time can only be represented as continuous quantities; and energy is precisely the idea through which everything can be reduced to space and time. If I am two kilometres away from a place and walk until I am only one kilometre from it, then no matter what road I have taken or what détours I have made, I shall have passed through all the intermediate distances between two kilometres and one kilometre, without any exception. It is possible to question this proposition, like any other, but it is impossible to represent to oneself its contrary. But science is concerned with phenomena and consequently, unlike metaphysical or mystical thought, it is on the level of representation or immediately above it; a scientific explanation which is in no way representable is void of meaning.

As one can learn from any textbook, the idea of energy is derived from the idea of work and can be reduced to it, and work is defined by the raising of a certain weight to a certain height. To say that there is a difference of energy between two states of a system means that it is possible to represent to oneself a transformation such that the system's passing from the one state to the other would be the counterpart of the raising or lowering of a certain weight through a certain height.

The earliest study of mechanical phenomena revealed a

constant which was defined by the conventional product of a force and a distance. Archimedes laid the foundations of mechanics by demonstrating that a symmetrical balance remains in equilibrium when the weight on one side of the fulcrum is modified, while changing its position, provided that the product of weight and the distance from the fulcrum remains constant. Galileo demonstrated that if a ball is successively rolled down differently inclined planes the product of the distance it rolls and the propulsive force is always the same. He stated as the general law of equilibrium that when two bodies, each acted upon by a force, are maintained at rest by their mutual interaction, then the respective products of the force and the distance which would be travelled without this interaction are equal. He showed, and Descartes after him, that such a product is the key to simple machines which, although they save men trouble, never in any circumstances alter the product of the force to be overcome and the displacement to be achieved. A balance, under the name of lever, is a simple machine, and so is an inclined plane when a weight is drawn up it.

Later, this same product was used as the key to all the phenomena of dynamics, under the name of kinetic energy or live force (*vis viva*). The formula for uniformly accelerated or retarded motion shows that when a ball rolling at uniform speed on a horizontal plane comes to an inclined plane and rolls up it to a certain height the work thus accomplished, in other words the product of this height and the weight of the ball, is equal to half the product of its mass and the square of its velocity along the horizontal plane. Thus the kinetic energy of a body in movement, in other words this half-product, is the work the body can accomplish, in certain conditions, by virtue of its speed alone. Potential energy is the work a body can accomplish under an infinitely small impulse in virtue of its position alone, like a ball on the edge of a table; the theorem of the conservation of energy states that, in a purely mechanical system, the sum of kinetic energy and potential energy remains constant so long as no work is done upon the system from outside or by the system upon the outside.

The great idea of the nineteenth century was to assimilate changes other than displacements to work, by means of numerical

equivalents. Joule was the first to do this. If a kilogram weight falls one metre and in doing so turns, by means of a pulley, a rotary device placed in water, the temperature of the water rises, and the heat energy which produces this rise of temperature equals one kilogrammeter. Joule confirmed that by a number of different mechanical processes it is always possible to raise the same body of water from 0° to 1° by expending the same amount of mechanical energy. After many experiments of the same kind nineteenth-century scientists pronounced that in every phenomenon there is increase or decrease in energy which is equivalent to mechanical energy—a principle which finds many fruitful applications in the study of chemical and electrical phenomena. The fundamental principle of nineteenth-century science is that it should be possible, in the case of every phenomenon, to represent to oneself, at least theoretically, either the production of the phenomenon by means of displacement of a weight or else the displacement of a weight by means of the phenomenon. That is the only meaning of the word energy, and that is why every kind of energy is measured in ergs, a unit defined by the raising of a weight.

A weight cannot be first at one height and then at another height without having passed through all the intermediate heights without exception. Distance is a continuous magnitude; in no geometry, even the non-Euclidean ones, is it ever represented otherwise. Time, which is represented in physics by uniform movement, in other words by distance, is a continuous quantity. The same is true of velocity (relation of distance to time), and of acceleration (relation of velocity to time). Into no definitions of energy do there enter any other quantities except distance, velocity, and acceleration, combined with mass; action is a product of energy and time. Non-mechanical energy is what is assumed as the equivalent of mechanical energy in non-mechanical phenomena. From all this it is easy to see how extraordinary it is to speak of quanta of energy or action.

And what is most extraordinary is that when Planck asserted that 'Matter can only emit radiant energy in finite quantities proportional to the frequency', this proposition was not arrived at through the study of microscopic phenomena, in which thresholds can be measured by experiment, but through the study of a macroscopic phenomenon, black body radiation.

The idea of irreversibility had been introduced into the conception of energy by the second law of thermodynamics, Clausius' principle, called the principle of the degradation of energy. This idea has led to that of probability by the simple notion that the passage from a more probable to a less probable state is practically irreversible. If one shuffles the printed characters of a verse of Valéry, they will be in a state of disorder; and if one shuffles them again a great many times they will not recompose a verse of Valéry. The physicist, Boltzmann, Planck's contemporary, had interpreted in this way such irreversible phenomena as the transformation of mechanical energy into heat energy by friction. Planck tried to reconstruct, by the use of probabilities, while conforming to the data of the experiment, the phenomenon known as black body radiation, and it was in the formula for these probabilities that he discovered discontinuity. He introduced discontinuity into energy because these probabilities are functions of energy.

One cannot help wondering whether he was obliged to do this. The experiment certainly did not oblige him, because the measurements, not being microscopic, could not give thresholds but only points of reference between which it was necessary to interpolate. It is always possible to interpolate by means of functions, either discontinuous or continuous. It would seem that Planck might have found functions, which would admittedly be different from those required by classical mechanics since the experiment contradicted the latter, but nevertheless continuous. One is tempted to ask whether it was not the very nature of the calculation of probabilities—which starts from the game of dice and consequently from numerical relations—which led Planck to introduce whole numbers into his formulae. This would indeed be a strange origin for such a great revolution. But in any case it was for convenience of calculation in regard to a particular case, black body radiation, that he introduced discontinuity into energy. His innovation was prodigiously lucky, because it has been accepted that his formulae are valid for all exchanges of energy between atoms and radiations; that is to say, they are valid generally. Thus the word energy has no longer any relation with weights and distances, or mass and velocity; but neither is it related to anything else, because no other definition of energy has been arrived at; it is related

to nothing. But that does not prevent people from continuing to talk about kinetic energy. There is nothing you can't do, on paper.

What makes the abyss between twentieth-century science and that of previous centuries is the different role of algebra. In physics algebra was at first simply a process for summarizing the relations, established by reasoning based on experiment, between the ideas of physics; an extremely convenient process for the numerical calculations necessary for their verification and application. But its role has continually increased in importance until finally, whereas algebra was once the auxiliary language and words the essential one, it is now exactly the other way round. There are even some physicists who tend to make algebra the sole language, or almost, so that in the end, an unattainable end of course, there would be nothing except figures derived from experimental measurements, and letters, combined in formulae. Now, ordinary language and algebraic language are not subject to the same logical requirements; relations between ideas are not fully represented by relations between letters; and, in particular, incompatible assertions may have equational equivalents which are by no means incompatible. When some relations between ideas have been translated into algebra and the formulae have been manipulated solely according to the numerical data of the experiment and the laws proper to algebra, results may be obtained which, when retranslated into spoken language, are a violent contradiction of common sense.

This gives an impressive appearance of profundity; because contradictions and strangeness and an insuperable difficulty in verbal expression are found also in profound philosophical and mystical meditation. But in the case of algebra it is something totally different. If a profound thought is inexpressible it is because it embraces at the same time several vertically superimposed relations, and ordinary language is ill-adapted for reflecting differences of level; but algebra is even worse adapted because it puts everything on the same level. Proofs, verifications, hypotheses, almost arbitrary conjectures, approximations, conceptions of appropriateness, convenience, and probability—all these things, once translated into letters, play an equal role in equations. If the algebra of physicists gives the impression

of profundity it is because it is entirely flat; the third dimension of thought is missing.

This false profundity has some very amusing effects, some of which would delight Rabelais or Molière. For philosophers, with respectful enthusiasm, are at pains to interpret what they cannot understand and to translate the equation into philosophy; and commentators in general, both lay and sometimes also even scientific ones, continue with touching perseverence to seek the profound meaning, the conception of the world, enshrined in contemporary science. Quite in vain, because there is none. In this respect science is like the emperor in Hans Andersen's story; two weavers promised him some clothes of a material invisible to the eyes of fools, so he walked naked the streets of his capital while neither he nor any of the spectators dared to recognize that he was naked. Anyone with any pretence to culture would fear to be thought a fool if he acknowledged to others or to himself that he could not perceive the slightest philosophical significance in the innovations of contemporary science; he prefers to invent one, which is inevitably very hazy. Planck's latest book,[1] three-quarters full of philosophical considerations, has provided a new illustration of the Andersen story. Certain critics, on the strength of the author's scientific fame, have believed they saw profound thought in the book and have given a few quotations in support of this belief. These quotations were commonplaces of rare banality.

The truth is that, apart from the author's identity, the book would be almost entirely without interest, except for a few pages. All that it has to say about general philosophy, God, the human soul, freedom, consciousness, the reality of the external world, is quite mediocre; generally sensible, but commonplace, woolly, and superficial. It shows clearly that Planck was not a great mind. It also shows, what is amusingly piquant, that this author who was responsible for such a great revolution was not only a thoroughly worthy man but also what is called a believing man, greatly attached to religion and to everything that is traditionally respected. But the really valuable pages of the book are those in which Planck naïvely and unwittingly commits himself to statements which throw a singular light on the processes by which science develops; they completely destroy

[1] See note on p. 56.

the commonplace, often repeated with emphasis by Planck himself, that science is something universal which floats in the air above the scientists of every time and every place.

Here are some extracts from these pages:

Contrary to what is readily maintained in certain circles of physicists, it is not true that, in order to elaborate on hypotheses, one may utilize only the ideas whose sense may be defined by measurements, *independently of all theory*. . . . *There is absolutely no quantity* which can be measured directly. On the contrary, a measurement receives its physical sense only by virtue of an interpretation made of the theory. . . . Even in the case of the most direct and most accurate measurements, for example, those of weight or of current intensity, the results can only be utilized after undergoing numerous corrections, whose calculation is derived from an hypothesis.

Even more revealing are these statements:

. . . the inventor of an hypothesis has unlimited scope in the choice of whatever means he may deem helpful to his ultimate purpose. He is not hindered by the physiological tendencies towards constructive picturing which are a feature of the activity of his own sense organs. Nor is he restricted by the guiding hand of the instruments he uses. . . . He even invents his own geometry as he goes along. And so with his spiritual working-gear, with these instruments of ideal accuracy, he takes a personal part, as it were, in every physical process that happens before him . . . for the purpose of pushing through these difficult thought experiments . . . to the final establishment of conclusions that will be of wide application. Naturally all such conclusions have, at the outset of their statement, nothing to do with the real research measurements. And therefore an hypothesis can never be declared true or false in the light of such measurements. All that can be asked about it is how far it reaches or falls short of serving some practical purpose or other.

But this is the real gem:

An important scientific innovation rarely makes its way by gradually winning over and converting its opponents. . . . What does happen is that its opponents gradually die out and that the growing generation is familiarized with the idea from the beginning.[1]

So scientific theories pass away as men's fashions did in the

[1] Simone Weil was quoting from Planck's *Initiations à la physique* (Flammarion, 1941). See corresponding passages in *Where is Science Going?* (Allen & Unwin, 1933), pp. 92–94, and *The Philosophy of Physics* (Allen & Unwin, 1936), p. 90.

seventeenth century; the Louis XIII style of dress disappeared when the last of the old men who had been young during Louis XIII's reign were dead.

No one who has duly pondered these statements will ever again say: 'Science affirms that. . . .' Science is voiceless; it is the scientists who talk. And what they say is certainly not independent of time, since we have Planck's word for it that the supporters of this or that point of view stop talking precisely when death stops their talk. And as for space, it is true that scientists belong to different countries; but travel, correspondence, and all means of communication are so swift *nowadays in peace-time that scientists of the same speciality*, although dispersed all over the world, constitute a tiny village, where everybody knows everybody, where nobody's private life is secret, where there is a continual circulation of anecdotes which, anywhere else, would be called tittle-tattle. In towns where several of them reside they meet continually, unless they have quarrelled, and even their wives hardly meet anybody except one another. It is a closed village and nobody from outside gets in. If one has studied the books of scientists for twenty years but is not a professional scientist one is still a layman from the point of view of science; and lay opinions have no credit in the village, no one pays the slightest attention to them, unless it is occasionally to borrow some pleasant or flattering expression. A cultured reader, an artist, a philosopher, a peasant, a Polynesian, are all of them to the same extent, *that is to say absolutely, outside science; and scientists themselves* are outside, with respect to every speciality except their own.

The villagers seldom leave the village; many scientists have limited and poorly cultivated minds apart from their speciality or, if a scientist is interested in something outside his scientific work, it is very unusual for him to relate that interest, in his mind, with his interest in science. The inhabitants of the village are studious, brilliant, exceptionally gifted; but all the same, up to an age when mind and character are for the most part already formed, they are *lycée* students among the others and are taught from mediocre textbooks. No one has ever been particularly concerned to develop their critical spirit. At no point in their lives are they specially trained to put the pure

love of truth above other motives; there is no organized process of elimination which makes a tendency in this sense a condition of entry to the village. There are processes of elimination, such as examinations and competitions, but they are not so arranged as to test the intensity and purity of the love of truth. Among the inhabitants of the village, as among all men, this love is to be found, mixed in varying proportions with other motives—among them the taste for precision and work properly done, and the desire to be talked about, and greed for money, consideration, fame, honours, titles, and also antipathies and jealousies and friendships. This village, like all other villages, is composed of average humanity, with a few excesses above and below. It has one or two peculiar traits; for example, its periodic upheavals due to changes of fashion. About every ten years a new generation becomes excited about new opinions. As elsewhere, the strife of generations and individuals results at any given moment in an average opinion. The state of science at a given moment is nothing else but this; it is the average opinion of the village of scientists. This opinion, it is true, is based upon experiments; but the experiments are conducted only in the village, with no outside control, and with costly and complicated apparatus which is found nowhere else; and the experiments are prepared, repeated, and corrected only by the inhabitants of the village and, above all, are interpreted only by them—and with a freedom whose breadth we may judge from the remarks of Planck already quoted. It is not true, therefore, that science is a sort of supernatural oracle and source of pronouncements which, although certainly differing from year to year, are necessarily each wiser than the last. Yet that is how science is commonly regarded today, and the ecstasy with which we cry: 'Science says so-and-so' is not even tempered by the fact that she will certainly not be saying it in five years' time. One might think—in this connexion as well as in several others—that actuality has the value of eternity for us. Even Valéry has several times spoken of science in the general superstitious manner. As for the scientists themselves, they are naturally the first to pass off their own opinions as if they were the deliverances of an oracle, for which they have no responsibility and cannot be called to account. This pretension is intolerable, because it is not legitimate. There is no oracle,

but only the opinions of scientists, who are men. They affirm what they believe they ought to affirm, and they are right to do so; but they themselves are the responsible authors of all their affirmations and are accountable for them. They render no account; but this is wrong of them, and in the first place they wrong themselves, because they refuse to be accountable even to themselves.

They are accountable above all for their rupture with classical science. Not that it is a misfortune. Classical science at its apogee, claiming the ability to explain everything without exception, had become intellectually suffocating; and that is why Bergson and Einstein and all those who broke through its enclosing walls were hailed as liberators. Moreover, the basic ideas of classical science—inertia, uniform motion, force, acceleration, kinetic energy, work—are obscure when closely examined. Is it not singular that uniform linear motion—the simplest of all motion, by virtue of the principle of inertia—should only be able to be measured, in time, by the daily motion of the stars, that is to say by a circular motion; and that it should only be able to be represented by the example of a ball rolling along a plane, a movement which includes a rotation? Is it not singular that this motion, which is accomplished without the intervention of any force, should contain an energy? Is it not strange that the notion of work, which is borrowed from human experience, should be defined in such a way that a man who carries 50 kilos a distance of 10 kilometres does no work? And that when two identical bodies cover the same distance in a straight line in the same time there is work in one case and not in the other, if the movement of one of them is uniform and the other not? One could instance many other strange anomalies.

But what is more serious is that classical science claimed to resolve the contradictions, or rather the correlations of contraries, which are integral to the human condition and from which man is forbidden to release himself. Science thought to achieve this by suppressing one of the two terms. For example, the continuous and the discontinuous are given to us; we think both in terms of space and of number; we cannot pass from one side of a river to the other without crossing it, and we can find no intermediary between iron and gold. Classical science wanted to suppress the discontinuous, so inevitably it stumbled

over it and the shock was felt at the very centre of physics, in its main department, in the study of energy itself, which was to have been the means of suppressing the discontinuous; in other words, it was felt in the study of thermodynamics. We are only able to conceive clearly transformations which can be repeated in the opposite direction, and yet we are in bondage to a time whose flow is irreversible. We grow old and die, ashes do not turn back into wood, rust does not become iron, and in general although many things can be easily and quickly destroyed it is either an impossible or else a difficult and lengthy task to reconstruct or replace them. The attempt to explain a world of this kind as a world of atoms subject to nothing but mechanical energy, which in no way involves irreversibility, ought to have been impossible. Classical science wanted to take account solely of blind necessity and to abolish completely the notion of order. But this notion reappeared in the guise of the probability which Boltzmann made use of to pass from the reversible to the irreversible, for on close examination a low probability can only be defined by an order. Of the dual relation which subordinates the whole to the parts and the parts to the whole, classical science wanted to retain only the former, because the latter, like the notion of order, seemed to be tainted with finality; but today in mathematics, physics, and biology the trend is towards the study of wholes considered as such. In themselves, these changes were happy ones, because the hopes of classical science were both absurd and impious. They were absurd because one cannot reasonably hope that a world in which contraries are correlated can be explained by suppressing one of every two contradictory terms; even if the suppressed term were an illusion, the illusion must still be accounted for, and the contrary term is of no help in this; of the ideas which man is given he cannot suppress any, all he can do is to find the right place for each. And they were impious because in this world man cannot release himself from contradictions, he can only make good use of them; as Plato knew, everything that the human intelligence can represent to itself involves contradictions, which are the lever by which it raises itself above its natural habitat.

What is disastrous is not the rejection of classical science but the way in which it has been rejected. It wrongly believed it

could progress indefinitely, and it ran into a dead end about the year 1900; but scientists failed to stop at the same time in order to contemplate and reflect upon the barrier, they did not try to describe and define it and, having taken it into account, to draw some general conclusions from it; instead, they rushed violently past it, leaving classical science behind them. And why should we be surprised at this? For are they not paid to forge continually ahead? Nobody advances in his career, or in reputation, or gets a Nobel prize, by standing still. To cease voluntarily from forging ahead, any brilliantly gifted scientist would need to be a sort of saint or hero, and why should he be a saint or hero? With rare exceptions, there are none to be found among the members of other professions. So the scientists forged ahead without revising anything, because any revision would have seemed a retrogression; they merely made an addition. When they ran into the discontinuous they still went on reducing everything to variations of energy; they simply put the discontinuous into energy itself, which deprived the latter of all meaning. But in spite of this they continued, from habit acquired during the past four centuries, to give it the central place in all their studies. They were unembarrassed by the difficulty of using the idea of probability as a bridge between the world as it is given to us and the hypothetical and purely mechanical world of atoms; the consequences of the quantum theory, which derived from the study of probability, led them to introduce probability among the atoms themselves. Thus the trajectories of atomic particles are no longer called necessary but probable, and there is no necessity anywhere. And yet, probability can only be defined as a rigorous necessity, of whose conditions some are known and others unknown; the conception of probability, divorced from that of necessity, is meaningless. Divorced from necessity, probability is no more than a résumé of statistics, and the only justification of statistics is practical utility; a thousand facts prevail over one fact, on the analogy of election by plebiscite. So there is nothing left but raw experience. But science, like every effort of thought, consists in interpreting experience. However, it is true that there has never been so much interpreting, or so many hypotheses, as today; never has there been so much licence for inventing them.

Strange though the doubt may appear, as yet, it is doubtful

all the same if scientists can continue to progress very long in such conditions. For there is practically nothing left to control the workings of their thought. There is hardly anything except algebra, which controls only in the sense that one has to adapt to any simple instrument in order to handle it; and algebra is a very flexible instrument. It is a mistake to think that experiment is of any use for this purpose, because all human thought, including beliefs which appear completely absurd, is experimental and claims to be based on and confirmed by experience. The prestige of sorcerers is founded on experience, and there is no human milieu in which an experimentally unverifiable belief is acceptable. All thought is an effort of interpretation of experience, and experience provides neither model nor rule nor criterion for the interpretation; it provides the data of problems but not a way of solving or even of formulating them. This effort requires, like all other efforts, to be oriented towards something; all human effort is oriented and when man is not going in any direction he remains motionless. He cannot do without values. For all theoretical study the name of value is truth. It is impossible, no doubt, for men of flesh and blood in this world to have any representation of truth which is not defective; but they must have one—an imperfect image of the non-representable truth which we once saw, as Plato says, beyond the sky.

Classical scientists had a representation of scientific truth which was certainly very defective, but they had one; whereas present-day scientists have nothing in their minds, however vague, remote, arbitrary, or improbable, which they can turn towards and call it truth. Still less, therefore, have they any conception of a road which could lead them towards it and by reference to which they could control every stage of their thought. They are still carried along by the impetus of earlier generations, and by this acquired motion they follow directions which today have no reference to anything; but this impetus will become exhausted. Licence is intoxicating, and we have become drunk with it in every sphere, but absolute licence brings one to a halt more surely than any chain. So it can be foreseen that in quite a short time, perhaps two or three generations or perhaps not so long, scientists will be brought to a standstill.

It can be foreseen, but it should not be feared. Why should we wish science to progress without obstacles? The development of technology offers no hope of happiness until we have learnt how to prevent men from using technology to dominate their fellows instead of nature; and, as for our knowledge, scientific progress can add nothing to it, since it is recognized today that the layman cannot understand anything about science and that scientists themselves are laymen outside their own special departments. A compulsory halt would perhaps also force scientists to try to recapitulate and revise and to compose, after the immortal model of Archimedes, an axiomatic scheme of physical chemistry, not so as to patch together an artificial coherence, but so as to make an honest survey of axioms, postulates, definitions, hypotheses, and principles, without omitting those which are implied in experimental technique itself, such as the use of the balance. Such a work would perhaps make science a field of knowledge, by revealing clearly the difficulties, contradictions, and impossibilities which today are hurriedly concealed under solutions behind which the intelligence can discern nothing. But it is a work which should be begun soon. Otherwise the arrest of science might lead, not to a renewal but to the disappearance of the scientific spirit throughout the whole world for several centuries, as happened after the Roman Empire had killed the science of Greece.

In the present crisis there is something compromised which is infinitely more precious even than science; it is the idea of truth, which had been very closely associated with science in the eighteenth century, and especially in the nineteenth. The association was very erroneous, but the habit has persisted with us. The disappearance of scientific truth appears to our eyes as the disappearance of truth, thanks to our habit of mistaking the one for the other. So soon as truth disappears, utility at once takes its place, because man always directs his effort towards some good or other. Thus utility becomes something which the intelligence is no longer entitled to define or to judge, but only to serve. From being the arbiter, intelligence becomes the servant, and it gets its orders from the desires. And, further, public opinion then replaces conscience as sovereign mistress of thoughts, because man always submits his thoughts to some

higher control, which is superior either in value or else in power. That is where we are today. Everything is oriented towards utility, which nobody thinks of defining; public opinion reigns supreme, in the village of scientists as in the great nations. It is as though we had returned to the age of Protagoras and the Sophists, the age when the art of persuasion—whose modern equivalent is advertising slogans, publicity, propaganda meetings, the press, the cinema, and radio—took the place of thought and controlled the fate of cities and accomplished coups d'état. So the ninth book of Plato's *Republic* reads like a description of contemporary events. Only today it is not the fate of Greece but of the entire world that is at stake. And we have no Socrates or Plato or Eudoxus, no Pythagorean tradition, and no teaching of the Mysteries. We have the Christian tradition, but it can do nothing for us unless it comes alive in us again.

For a long time now, in every sphere without exception, the official guardians of spiritual values have allowed them to decay, and this because of their own neglect and not under any external pressure. A sort of fear prevents us from recognizing this fact, as though there was a risk, by doing so, of damaging the values themselves; but, so far from that, in the period of sorrow and humiliation which we have already entered and which will perhaps be a very long one, our only hope of recovering some day what we lack is to feel with our whole soul how well-merited our misfortune is. We see intelligence more and more enslaved by the power of arms and everyone today is compelled by suffering to be aware of that servitude; but even before there was any power to obey, the intelligence had already sunk into a servile condition. When someone exposes himself as a slave in the market place, what wonder if he finds a master?

The tempest raging around us has uprooted all values, disrupted their hierarchy, and put them all in question, to weigh them again on the always untrue balance of force. Then at least let us, too, in these days, put them all in question for ourselves, each on his own account; let us weigh them in our own hearts in the silence of true attention and in the hope that it will be granted to us to make of our conscience a true balance.

4 *Scientism—A Review*

French title: *L'Avenir de la Science*. A review of *L'Avenir de la Science* by Louis de Broglie, André Thérive, Raymond Charmet, Pierre Devaux, Daniel-Rops, and the Rev. Père Sertillanges. (Paris, Plon, collection 'Présences', 1941.) It was published in the *Cahiers du Sud*, No. 245, April 1942, under the pseudonym 'Emile Novis'.

This book is directed against what is known as scientism. Strictly speaking, there are two distinct types of scientism: the nineteenth-century type, represented by the lamentable trinity of Taine, Renan, and Berthelot, from which Bergson has helped to deliver us but which is still very much alive in the masses, among the successors of M. Homais and Bouvard and Pécuchet, and even among a great many decent people; and the scientism of today, which has lost all its rigidity but by a strange paradox is still as narrow as ever. It is perfectly compatible with anti-nationalism, with anti-intellectualism, with surrealism—in fact with absolutely everything except what is authentically spiritual. This is particularly the case in France, where there is a school of sociology which makes it possible to study myth and folklore and the civilizations of antiquity and of the coloured peoples without finding any trace of spirituality anywhere. The 1937 Exhibition, already so far away from us, was to some extent a manifestation of contemporary scientism; an extremely cultured man, high in the university hierarchy, seriously wished after visiting it that in every village in France the church might be replaced by a miniature Palace of Discovery.

As is well known, the collection *Présences* in which this book appears is of Catholic inspiration. It is fitting that Catholics should relegate the Palace of Discovery to its proper place in relation to the Church. They have been all too slow about it and are too much permeated by the very atmosphere they wish to dissipate; so strong is the spirit of the age in which one lives. Thus the Rev. Père Sertillanges, in an essay full of good

sense, points out that no man of talent has ever been altogether a scientist, because the limitations of science are obvious. But he adds: 'Renan was right when he said: "The great reign of the spirit will only begin when the material world is entirely subject to man." And that is the task of science.' Very probably Father Sertillanges means no more than to say that the contemplative life demands leisure and that technology is one of the preconditions for leisure. But what he actually says is something quite different; and one is tempted to ask him whether the domination of the world by the human spirit was not the definition of the earthly Paradise and whether man's subjection to flesh and matter, which imposes work upon him among other burdens, did not begin at the moment when he became a sinner, and whether the effects of sin can be undone by anything except grace.

Daniel-Rops expounds once again, very clearly and ably, the ideas formerly diffused by the group of 'Ordre Nouveau'. They are simple. Present-day techniques are tending to reduce to almost nothing the part played by human labour in the production of manufactured articles, and in doing so they equally reduce the profit on capital and the value of mass-produced goods. Let us encourage this development; let us abolish all manual labour except for a short spell of civic duty imposed on the entire population; let the production of necessary goods be socialized and the products be distributed free. People will employ their leisure freely in qualified work which will still be regulated by the law of supply and demand. In this sketch of the future Daniel-Rops employs verbs in the future tense, just like any Marxist. A Moslem would warn him of the imprudence of using the future tense without adding 'insh' Allah', 'if God wills'. If passion played so small a part in social organization as this scheme presupposes, it would be possible to obtain an equitable system even with poorly developed techniques. The members of 'Ordre Nouveau', an extremely sympathetic group, forget that in all human affairs the problem of incentive is vital, is as important as fuel for a motor. And yet they ought to have learnt this when they tried to organize a model of voluntary civilian service, and failed. They failed because there was nothing to give people an incentive to follow them. A people subjected to a short period of compulsory unpaid labour will not really work except under pressure from a despotic central power and under the threat of severe punishments, unless other truly effective stimulants can be discovered; and for this a real effort of discovery is needed. And as for the long years of leisure, one must be naïve, especially today, not to reflect that some people would devote them to the one sport which really inflames men, the sport whose objective is the domination of others; having once taken up this sport it is not easy to drop it, and, since it calls for unlimited resources, in armaments and other things, the period of compulsory labour would soon be prolonged to a whole life-time. Daniel-Rops, yielding unconsciously to the prestige of Marxism although it forms part of the scientism which he is combating, believes that wars are the result of economic maladjustments; but the economic maladjustments are primarily the result of that will to power of which war is one of the aspects. These problems call for the closest examination because, if Daniel-Rops' hopes are in fact illusory, these illusions are extremely dangerous at the present time.

André Thérive contributes some amusing pages on the different kinds of scientific romance, from Cyrano de Bergerac to Huxley. Pierre Devaux gives a panorama of past and future inventions, of great value as regards the past. Raymond Charmet, writing on what he calls 'the modern myth of science', gives a number of quotations among which several are pearls of pure idiocy; this, for example, from J. Perrin in his introduction to *Atoms*: 'The conquest of Destiny seems to authorise at last an unbounded Hope'.

Naturally, the most interesting essay in the book is Louis de Broglie's. It is compact, clear, perfectly precise, and every word is instructive. In a general way, the comparison between contemporary scientists, so far as one can judge them from their more popular writings, and thinkers like Lavoisier, Lagrange, Ampère, not to mention Galileo and Archimedes, is profoundly depressing; but a scientist like Louis de Broglie brings some consolation.

And yet what he says about philosophy is of a naïveté which is typically contemporary. All of what he believes to be the contributions of science to philosophy are illusory, in the sense that what he takes to be new is not new. It is true that quantum

mechanics finally delivered philosophy from the fashionable scientism of the nineteenth century; but with a little intelligence philosophers could have delivered themselves without the help of quanta.

It was suspected before the appearance of quanta that there is not only continuity in the universe but also discontinuity; the Pythagoreans, for example, already in their day attached importance to numbers. The notion of qualitative change has always implied certain actions 'impossible to represent within our usual spatio-temporal frame'. It is only a physicist who can speak of 'the apparent determinism of the macroscopic scale'; on the scale of our senses there is no appearance of determinism except in the laboratory. Ask a meteorologist or a peasant if they see much determinism in storms or rain; look at the sea, and say if the shapes of the waves appear to reveal a very rigorous necessity! The truth is that nineteenth-century physicists believed there were no more things in heaven and earth than in their laboratory—and indeed in their laboratory only at the moment when an experiment succeeded. Their excuse was their professional obsession but those who shared their belief without that excuse were fools. Physicists today have lost that illusion; so much the better, but they are wrong to think that this means they are contributing something new. Determinism, says M. de Broglie, can no longer be maintained except as a 'metaphysical postulate'. But it was never anything else for a man of any intelligence. It was nothing else for Lucretius.

Quantum mechanics has also cleared up a confusion about the very important conception of the 'negligible' which, once again, the slightest critical effort would have sufficed to clear up equally well. One neglects in fact what is very small compared to the object of one's research. Physicists have tried to make negligible by right what they have treated as negligible in fact, by assimilating it to the infinitely small of mathematics. The smoother a metal surface is, the more slowly the speed decreases of a ball rolling horizontally across it. I cannot make the metal surface as smooth as I would like, but having procured the smoothest available I can imagine that in twenty years' time smoother ones will be produced. In mathematics, the further I carry the series 1.9999 etc., the less the quantity obtained differs from 2; and for this reason I say that 1.999 . . . 9 is

equal to 2, and by analogy I say also that a ball rolls on a smooth surface at a uniform speed. But there is in reality a great difference between the two limiting cases. The quantity which mathematicians call infinitely small can be diminished at any moment, by calculation, exactly as much as may be desired; but the quantity which physicists call negligible cannot be diminished at the present moment any further than present technical resources permit, and to diminish it further requires a technical progress which cannot at this moment be taken as certain. So there cannot be an infinitely small in physics. This fact is obvious, but it had been forgotten and quantum mechanics compelled its recognition.

It has recently been perceived that the processes of observing and measuring exert an action upon the phenomena observed, so that it is impossible to know a phenomenon as it would be if we were not observing it. This obvious truth has always been known, but it was thought that the interfering action could be indefinitely diminished through the improvement of experimental technique, and in this way it was assimilated *de jure* to the infinitely small. Today, however, it is postulated in quantum mechanics, rightly or wrongly, that there is an insuperable limit to technical progress in accuracy; which means that there is a source of error which cannot be reduced. But even if the limit imposed today by quantum mechanics were some day to be surpassed it would still remain true that observation disturbs the phenomenon observed, and that the disturbance is not infinitesimal.

M. de Broglie points to a new philosophical idea invented by physicists, or rather by a physicist, M. Niels Bohr. This has been called 'complementarity' by M. Bohr and he gives as examples of it the 'wave' aspect and the 'corpuscle' aspect of matter, and the vital aspect and the physico-chemical aspect in the description of living beings. The nearer we approach to precision in regard to one of these aspects, the further from it we get in regard to the complementary aspect, and reciprocally.

This complementarity is nothing other than the old correlation of contraries which is basic in the thought of Heraclitus and Plato. From the philosophical point of view it has no novelty, but that does not make it the less interesting, because nothing is so interesting in philosophy as a recent discovery of

an eternal idea. From the scientific point of view, however, it has great novelty, because from the Renaissance onwards an attempt has been made to impose unity upon the whole of science. This was a mad ambition, and today it has become necessary to introduce the correlation of contraries. A fortunate necessity, because no human thought is valid unless it recognizes this relation. But it is a difficult relation to handle properly, and if scientists want to begin to make use of it they will need a serious philosophical grounding. Heraclitus, Plato, and Kant could instruct them, but not any contemporary authors.

The progress of science, on the other hand, can bring nothing new to philosophy; and this for two reasons. First, science cannot be anything for the philosopher except matter for reflection. The philosopher can find something to learn from scientists, as he can from blacksmiths, painters, or poets; but not more, and above all not in a different way. But the main reason is that there is not, strictly speaking, the possibility of anything new in philosophy. When a man introduces a new thought into philosophy it can hardly be anything except a new accent upon some thought which is not only eternal by right but ancient in fact. Novelties of this kind, which are infinitely valuable, are the result only of long meditation by a great mind. But, as for novelties in the ordinary sense of the word, there are none. Philosophy does not progress nor evolve; and philosophers are uncomfortable today, for they must either betray their vocation or be out of fashion. The fashion today is to progress, to evolve. It is indeed something even more compulsive than a fashion. If the great public were aware that philosophy is not susceptible to progress, there would no doubt be resentment at its getting any public funds. To find a place in the budget for the eternal is not in the spirit of our age. So the majority of philosophers keep quiet about that eternity which is their privilege. And that is why, when we find that the ideas of Louis de Broglie about the contributions of science to philosophy are not worthy of a mind like his, it is not him that we should blame but the philosophers whom he has happened to meet.

In any case, this book is a source of encouragement. It shows that even today it is still possible to reflect, and to publish books which stimulate reflection.

5 *The Teaching of Mathematics*

French title: *L'Enseignement des mathématiques*. This draft for an article was written in 1932.

My purpose here is to denounce an idea which seems to me dangerous and false, although shared by many revolutionaries, and at the same time to report to my comrades a personal experiment in teaching.

As we know, it is often repeated by Bouasse, in his own vigorous and lively manner, that mathematics is nothing more for the physicist than a language enabling him to express conveniently the results of experiments. This idea, which is also held by Henri Poincaré and a great many bourgeois philosophers, is considered by Louzon to have revolutionary value. The articles by Barrué and Comrade R— in the *Université syndicaliste* show that revolutionary trade unionists and orthodox communists are at one in considering everything that is purely theoretical as bourgeois.

The question deserves prolonged examination. For the moment, I will merely observe that if it is right to denounce with Marx 'the shameful division between intellectual and manual labour' this is far from meaning that we ought to confuse theory and practice. The culture of a socialist society would be a synthesis of theory and practice; but to synthesize is not the same as to confuse together; it is only contraries that can be synthesized. Historically speaking, science was born on the day when there was a moment of disinterested research, unconcerned about its application. It was not Egypt but Greece which created science. The whole of our culture, Marxism included, rests upon the 'miracle of Greece'; that is to say, upon a civilization which, while making marvellous theoretical discoveries, remained from the technical point of view absolutely stationary. The Middle Ages on the other hand was a period of capital importance in respect of technical progress, as Lefebvre des

Nouëttes has recently shown; but not even the Thomists can deny that its progress in the sciences was practically nil. The Renaissance was above all a renaissance of scientific culture. At that time, which was the dawn of the capitalist régime, a link was established for the first time between theory and its application. But Descartes, whose major role in the development of science is incontestable, so far from thinking of mathematics as a mere language for convenient summaries, regarded it as an explanatory principle, and the only one by which man could obtain a methodical hold upon natural forces. Nowadays, no doubt, if we are to believe Bouasse, the value of a mathematical proposition is established 'in the same way as that of a pass in football'; but we may still ask whether this is not the sign of a cultural decadence, a decadence symptomatic of the régime in which we live. We should reflect that Marx's principal glory is to have rescued the study of societies not only from Utopianism but also and at the same time from empiricism. It seems clear to me that in Marx's study of society the relations between theoretical analysis, experiment, and application recall Descartes' conception of science much more than they recall that of Henri Poincaré and Bouasse.

Humanity cannot progress by importing into theoretical study the processes of blind routine and haphazard experiment by which production has so long been dominated. And yet, to judge by what scientists say, that is all that science today seems capable of. Progress would consist in importing, so far as possible, into production itself something which humanity at first discovered only in purely theoretical speculations, completely detached from all thought of application; that is to say, method. Descartes wanted to found a workers' university where every workman could acquire the theoretical conceptions necessary for understanding his own craft, and in this he was closer to the Marxist idea of 'the degrading division of labour into intellectual and manual labour' than those who claim to be Marxists today. It is true that science is valuable in so far as it is related to applications; but on the other hand—as all those who call themselves 'dialecticians' ought easily to understand—the true relation between theory and application only appears when theoretical research has been purged of all empiricism.

The teaching experiment which I wish to describe to my comrades is related to the historical method, rightly advocated by Langevin and several others, in the teaching of science.

As a lecturer in philosophy I took advantage of the fact that the programme includes an examination of 'method in mathematics' to devote a dozen hours to the history of mathematics, showing it to be oriented towards a solution of the fundamental contradiction between the continuous and the discontinuous (number). Here, in very sketchy outline, is how I treated it.

The first stage is the measurement of lengths. The second is the theorem, which legend attributes to Thales, concerning the similarity of triangles; the combination of this theorem with that of Pythagoras, which proceeds directly from it, permits all linear ratios to be treated as numerical ratios. The discovery of incommensurables seemed to destroy the very foundations of this geometry; but Eudoxus restored its validity, on a higher plane, by his theory of proportions (the equivalent of our theory of generalized number) and his method of exhaustion (the first outline of the infinitesimal calculus). At the same time Menaechmus, by discovering conics and also the formulae for them, revealed the possibility of a law for defining curves by relating them to straight lines. Archimedes and Apollonius did little more than develop these discoveries, though their general scope could not yet be perceived, for want of an indispensable instrument—algebra. In Diophantus there is already something like a first sketch of algebra; but it is with the Renaissance that algebra in the strict sense of the word begins. As used by Descartes it developed the full scope of the discoveries of Menaechmus and Apollonius. The same work was done by Leibnitz, Newton, and Lagrange (and in a really intelligible manner only by Lagrange) for the infinitesimal calculus, the principle of which had been discovered by Eudoxus.

My limited knowledge of mathematics unfortunately prevented me from going any further.

As a teaching experiment this outline was entirely successful, in the sense that it was understood by all the students, including the weakest in mathematics, and interested them to the point of enthusiasm. They understood that mathematics is a product of human thought and not a collection of dogmas.

It is certainly a mistake to think that these strange territories of modern science hold secrets to which only the initiated have access. The ideas of space, time, and cause are the same for the most eminent physicist and for an illiterate peasant; the only thing the physicist has in addition is an exact knowledge of the cases in which these common ideas do not avail for organizing into a coherent whole the sum of experimental data and their simplest interpretations. If, at this point, the physicist chooses to frame suppositions, laws, and conceptions incompatible with the ideas which are common to all, he will alienate himself not only from the peasant but first of all from himself, from all that part of himself in which he resembles the peasant.

7 *Fragment: The Paradox of Inertia*

No French title. Date uncertain.

The notion of inert matter, which moves only if pushed, must doubtless have been in man's mind at all times, both from his experience of play and of the effort of work. The conception of immobility is a definite conception. On the other hand, the conception of motion is not definite, because time enters into it concurrently with change of position. In every age perhaps, and in any case since the Greek age, uniform motion has appeared to be the form of motion which defines itself and defines other movements, just as the straight line defines itself and defines other lines; and the Greeks attributed it to the stars for the reason that they are perfect and are immune from hazards. They had no other reason, and there can be no other reason; for how can movement be measured without measuring time, and how can time be measured? The hypothesis of uniform motion accounts for the regularity of celestial phenomena, but this could also be accounted for by attributing varied movements to the celestial sphere, the sun, the moon, and the planets—if the variations were suitably chosen. Indeed, this is what we do today, except for the celestial sphere; because we attribute an acceleration to the stars. And if we do not also attribute it to the earth's rotating movement, is not this simply because we feel the same piety as the Greeks towards the fixed stars which apportion our days? Uniform motion has always signified, and still signifies today, a movement which has a constant relation to that of the fixed stars. It cannot be otherwise. The things around us are practically motionless unless pushed, animals, which are an exception, seem to move in response to whims and necessities similar to our own; the wind, in its irregular and often sudden and violent movement, which is continually compared in the *Iliad* to the surge of victory in battle, seems always driving and never driven; and we only know it by its effect on the things it drives. The stars neither

drive nor are driven, they are never arrested nor obstructed; to our eyes their progress seems unimpelled and unresisted, and when we watch their slow declination around the pole it inevitably suggests to us a movement without impulsion or resistance, and therefore uniform. But the Greek conception of circular and uniform motion as perfect motion, immune from external influences, gave absolutely no possibility of defining the movements which take place on the earth around us.

To define these movements, Galileo boldly made a new departure by neglecting a fact of universal experience, namely the fact that all moving things except the stars come to a stop at some time or other. We have become accustomed by now to think that the principle of inertia is obvious, and naïve astonishment is sometimes expressed that neither Antiquity nor the Middle Ages recognized it; but so far from being obvious it is a paradox. The motion of the stars, too slow to appear to us as movement and therefore easily conceived as circular, is the only motion which never ceases; the movements which we perform or instigate or see taking place around us, and which are always linked in our mind with the idea of direction, that is to say, of the straight line, always come to an end some time. More briefly, the circular motion of the stars is of indefinite duration and linear motion is of finite duration. This opposition is confirmed by the constant and secular experience of man. Is it not therefore a most audacious paradox to assert that perfect motion, free from external influence and of indefinite duration, is uniform linear motion? It is obvious, however, that this paradox is essential for defining the movements with which our terrestrial life is concerned. Nevertheless, Galileo could not have conceived a uniform linear movement by pushing pieces of rock on a moor or cupboards in a room, because these things become immobile as soon as one stops pushing; he conceived it by giving a gentle push to a ball placed on a polished horizontal surface and by choosing to neglect first of all the fact that the ball does stop in the end and then the fact that it rolls instead of sliding. Galileo next discovered uniformly accelerated motion, calculated its law by an integration, and by rolling a ball down variously inclined planes approximately confirmed this law by experiment, as well as a relation between the acceleration and the steepness of the plane.

8 *Fragment: Foundation of a New Science*

French title: *Du fondement d'une science nouvelle.* Date uncertain.

Limitation is the law of the manifested world. Only God (or whatever name one may choose) is without limits. (Under another aspect, relation is the law of the manifested world, and only God is without relation.) Man, who is of the world and who has a part in God, puts the unlimited and the absolute into the world, where they are error; this error is suffering and sin, and all human beings, even the most ignorant, are torn by this contradiction. Desire is unlimited as to its object but limited in its principle, as also is every activity proceeding from desire, by the fatigue which condemns it to death in advance. Terror puts an absolute into some external thing and leads a human being to deny his own existence (*nihil sum, perii*, say the slaves in Plautus). Deliverance consists in reading limit and relation in all sensible phenomena without exception, with the same clarity and immediacy as a meaning in a printed text. The significance of a true science is to constitute a preparation for deliverance.

Equilibrium, in so far as equilibrium defines limits, is the essential idea of science; by means of this idea every change, and therefore every phenomenon, is considered as a rupture of equilibrium, linked with all other changes through the compensation of successive ruptures of equilibrium; and this compensation makes all disequilibria an image of equilibrium, all changes an image of the motionless, and time an image of eternity.

In man, injustice consists in disregarding limits; and therefore the successive and compensating ruptures of equilibrium constitute the image of a succession of injustices and expiations, which are themselves unjust, compensating one another like the indefinitely prolonged swaying this way and that way of a

pair of scales. This is expressed in the words of Anaximander: 'It is from this that things arise and to it their destruction returns them, according to necessity; for things undergo from one another a punishment and an expiation because of their injustices according to the order of time.'

It would be necessary, in order to perceive an image of equilibrium in the indefinite succession of ruptures of equilibrium, to embrace the totality of the universe and of time; and this is not granted to man, whose thought, in so far as it relates to objects, is limited.

Man would be incapable of forming a concrete conception of equilibrium, and therefore of limit, and therefore of the unlimited, and he would be incapable in a general way of thought, unless he were given images of equilibrium on his own scale. This is not a necessity, however, but a grace; a grace indistinguishable from the grace by which man exists.

On his own scale means two things: not too large for him to embrace, and not too small for him to discern. If he goes outside his natural scale, by the accumulation of experimental facts and by the increasing perfection of telescopic and microscopic instruments, he may easily find himself among a complexity of facts in which he can discern no necessity because in order to do so he would need to embrace either a great deal more or a great deal less. But he cannot embrace much more, first because although technique may progress it cannot attain unlimited powers, and secondly because his mental capacity remains always subject to the same limits while technique progresses and facts accumulate. So he has to be content to embrace less.

More generally, no matter how much use is made of algebra and instruments, science will always depend largely upon man's intelligence and physique, which are limited and do not become less so with the passing of centuries; so it is absurd to believe that science is capable of unlimited progress. It is limited, like all human things, except that point in man which is assimilated to God; and it is well that it should be limited because it is not an end to which many men ought to devote themselves; it is a means, for every man. What is needed now is not to try to extend it further, but to bring thought to bear upon it.

One can describe as microcosms or closed vessels those

portions of the universe, limited in space and time, in which an image of equilibrium can be discerned, or rather, approximately discerned—for we meet here the notion, fundamental in physics, of the *negligible*. Since something is neglected in these images—and this something is never negligible but is of the dimension of the universe, since what it is, principally, is the presence of the whole surrounding universe—they are not existing things but abstractions, and yet more real than the phenomena present to our senses. The simplest of them, and symbol of all the others, is the balance, which can therefore symbolize both knowledge of the world and justice.

Whatever department or aspect of nature or of human life we may study, we have understood something when we have defined an equilibrium, and limits in relation to this equilibrium, and relations of compensation linking successive ruptures of equilibrium. This is also true for studies of social life and of the human soul, and only in this way can they be sciences.

Ruptures of equilibrium which compensate one another are something like cyclical transformations; fixed ratios, derived from the equilibrium with respect to which these ruptures are defined, dominate these successions and these compensations; thus the fairly recent mathematical conceptions of group and invariant, along with the conception of set, are the very centre of science. If properly used, these three ideas are applicable generally.

The limitations of the human mind necessitate the division of science into departments. A human body is ponderable matter, and matter exposed to and opaque to light, and living matter, and matter mysteriously linked to thought; thus it partakes of various different equilibriums. The departmentalization of science is to some extent imposed on us. Individual thought, social life, animal and vegetable living matter, non-living matter—these are divisions which we cannot abolish. In the department of non-living matter the stars are separate from all the rest; it is our own senses which impose the original divisions upon the nature around us and although further study may bring others to light the process of dividing physics into separate branches is never completely independent of the human senses. The delimitation of a department and the definition of an equilibrium reciprocally condition one another, and

this makes the development of science analogous to the work of the artist.

Limit, which implies the notion of equilibrium, is the first law of the manifested world; hierarchy is the second. The notion of value is inseparable from human thought and it cannot be judged, because it imposes itself; all we can do is to descry whether, and to what, it applies. Value judgements are always intuitive and do not admit of proof; discursive reason intervenes only to define and set them in order so that there is no contradiction which might prevent the relation of all of them to one and the same value. Knowledge of our imperfection as thinking beings is the most immediate knowledge; it is common to all men and is continuously present, except perhaps in sleep and dreams; it is inseparable from consciousness, even in its lower degrees, and from effort; it implies a relation to a perfection, to a supreme value, which therefore appears to man negatively and as related to thought. In this way, human thought participates in value; and the conditions for thought, because they are such, participate also. They can be classified hierarchically from this point of view. For example, the forms of matter can be enumerated in the following hierarchy: first, living matter so organized as to form a human body, then living animal matter, followed by living vegetable matter, radiant energy as the condition for chemical changes which produce living matter, mechanical energy, and finally heat energy. Man can and ought to conceive the possibility of hierarchies of value unrelated to human thought, but he cannot conceive these hierarchies.

All the things that are made of matter are continually changing, transforming themselves into one another, and equilibrium consists in the fact that transformations in one direction are compensated by others in the opposite direction. The directions in which transformations take place could be classified in an infinite number of ways, but if they are related to a hierarchy of values they appear to be of three kinds: from the lower to the higher, from the higher to the lower, and on the same level. And this classification is valid for all changes, not only for material ones. A correspondence can be established, by abstraction, between the three kinds of transformation and three tendencies, which are the *gunas* of Indian

philosophy—just as the Hindu notion of *dharma* is precisely the notion of equilibrium; this can be expressed by saying that every phenomenon tends at the same time to self-perpetuation or extension, to degradation, and to elevation. The difficulty is to define these terms in relation to the different types of phenomena.

To the first two tendencies there correspond, so far as non-living matter is concerned, the two principles which dominated science in the nineteenth century and still do today: the conservation and the degradation of energy. Up to now, science has not formulated a third principle but clearly it is needed, to balance the degradation of energy; for otherwise maximum entropy would already have been reached everywhere, and everything would be motionless and dead. The transformation of inorganic into organic matter, however, is the opposite of a degradation, and this transformation is occurring continually. But the division of science into specialized subjects prevents physics from taking it into account. Nevertheless, there is something in non-living matter which makes it able to be transformed into living matter; and in the same way there is something in the matter constituting a human body which makes it able to be transformed in such a way that its physical behaviour corresponds to the aspiration of thought towards the good.

The tendency of every phenomenon to perpetuate or extend itself is implied by the fact of continual change; to imagine the abolition of this tendency is to imagine the immediate cessation of everything. Galileo considered uniform linear motion to be the fundamental phenomenon, and he expressed it by the principle of inertia. Every linear movement—that is to say, all motion—tends to prolong itself indefinitely at the same speed. This principle contains an unlimited expansion and at the same time a limit, the constancy of the speed. But there is a sense in which inertia, by implying for all motion an endless continuation in space and time, implies the unlimited in space and time. The notion of mechanical energy implies the unlimited in time, but not in space. Every closed system of bodies and material forces implies a cycle of movements indefinitely recommenced; because the acceleration corresponding to the forces increases the velocity, and therefore the kinetic energy,

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and reduces the potential energy up to the moment when it becomes nil, at which moment, by the effect of inertia, everything recommences in the opposite direction. An example of this is the system formed by the earth and a perfectly elastic ball dropped from a certain height. So far as time is concerned, the degradation of energy introduces a limit. In a closed system, when movement has been transformed into heat and a uniform temperature has been established nothing further can happen.

9 *Variant*

This is a variant of the preceding article. See page 81 above.

. . . [The balance] can therefore symbolize both necessity and justice.

Whatever department or aspect of nature or of human life we may study, we have understood something when we have defined an equilibrium, and limits in relation to this equilibrium, and relations of compensation linking successive ruptures of equilibrium. This is also true for studies of social life and of the human soul, and only in this way can they be sciences.

Ruptures of equilibrium which compensate one another are something like cyclical transformations; these sequences and compensations are governed by fixed relations which are derived from the equilibrium which defines the ruptures. In the same way, the quite recent mathematical conceptions of group and of invariant, along with that of set, are at the very centre of science. If properly used, these three ideas are applicable generally. The conception of set is concerned with the relation of whole to part in the most general sense, a relation which corresponds to the limited character of human thought. The whole which is under consideration is always limited in certain respects, even if it contains an infinity and of no matter what order. Although it is embraced as a whole by a single act of thought, it takes time to traverse, which implies division into parts, either discrete or continuous.

The division of the universe into departments is in part a datum for man—immediately given, in a sense, and with irreducible divisions. For example, the division between interior and exterior, between thought and the objects of sense. Among the objects of sense irreducible divisions are made by the five senses. Others are furnished by the distinction between men, and living things, and inert matter; and still others occur

to the mind as it investigates the world. We may wish to replace the immediately given divisions by the ones we discover for ourselves, but we never completely succeed and the discovered ones are never unrelated to the given ones. To seek an equilibrium always implies a domain in relation to which the equilibrium has meaning; and reciprocally any domain is defined only by a structure; this is a sort of vicious circle which makes scientific investigation something analogous to artistic creation.

Limit implies by contrast a tendency to exceed all limits, for otherwise everything would come to a stop and limits would no longer be limits of anything. The continuity of change implies that things tend incessantly to exceed their limits,[1] and it is in this sense that they are 'unjust', as Anaximander says. It is this tendency of phenomena towards expansion that Galileo, who regarded linear movement as the fundamental phenomenon, expressed by the principle of inertia. If one assumes that there is vacuum, this tendency in itself contains no limit (except that the uniformity of speed is in some sense a limit) and that is why it has to be combined with the notion of force, which does contain a limit. Because force as we conceive it acts so as to abolish itself; attraction abolishes itself by abolishing distance, elasticity by distension, and so on. Were it not for inertia, this would bring everything to a stop; but inertia, combined with force, produces cycles and the corresponding invariant is expressed by the principle of the conservation of energy. Such is the system composed of a perfectly elastic ball subject to gravitation and dropped from a certain height on to a perfectly hard, smooth, and horizontal surface. These cycles reproduce themselves indefinitely. (At the basis of our mechanics there is this cycle with the velocity varying from zero to a maximum, and to it we reduce even the stars; whereas circular uniform motion was at the basis of Greek mechanics.)

In this case limit produces only a to and fro between contrary and contrary by increase and decrease of quantity. There is another conception of limit which corresponds to a change in kind.

[1] 'Nature is composed of the unlimited and of limits' (Philolaus). [Note by S.W.]

PART II

I believe that this thought is the truth, and that it requires today a modern and Western form of expression. That is to say, it requires to be expressed through the only approximately good thing we can call our own, namely science. This is all the less difficult because it is itself the origin of science. There are a few texts which indicate with certainty that Greek geometry arose out of religious thought; and this thought appears to resemble Christianity almost to the point of identity.

Letter to Jean Wahl in Seventy Letters
(Oxford University Press, 1965) pp. 159–60

The criticism of religion is always, as Marx said, the condition for all progress; but what Marx and the Marxists have not clearly seen is that, in our day, everything that is most retrograde in the spirit of religion has taken refuge, above all, in science itself. A science like ours, essentially closed to the layman, and therefore to scientists themselves, because each of them is a layman outside his own narrow specialism, is the proper theology of an ever increasingly bureaucratic society. 'It is secrecy, *mystery, that is everywhere the soul of bureaucracy', wrote Marx in his youth; and mystery is founded upon specialization. Mystery is the condition of all privilege and consequently of all oppression; and it is in science itself, the breaker of idols, the destroyer of mystery, that mystery has found its last refuge. . . .*

Oppression et liberté *(Paris, Gallimard, 1955) p. 264*

10 God in Plato

This essay appeared in *La Source grecque* (Gallimard, 1953). The first 12 pages have appeared in English in *Intimations of Christianity* (Routledge, 1957). The essay was extracted from the notebooks which Simone Weil wrote in Marseilles and New York between the end of 1940 and November 1942; hence its fragmentary style.

Spirituality in Plato—that is to say, Greek spirituality. Aristotle is perhaps the only *philosopher*, in the modern sense, in Greece, and he is quite outside the Greek tradition. Plato is all that we have of Greek spirituality, and of him we have only the popular works.

One is obliged to guess—from the fact that a particular idea is not found there, or not explicitly. . . . Then what is Plato? A *mystic*, the inheritor of a mystical tradition which permeated the whole of Greece.

Each people of antiquity had its vocation—one aspect of divine things (all but the Romans). For Israel: the unity of God. For India: assimilation of the soul with God in mystical union. For China: God's special mode of operation, plenitude of action in what seems inaction, plenitude of presence in what seems absence, void and silence. For Egypt: immortality, salvation of the just soul after death by assimilation with a suffering God, dead and resurrected and charity towards one's neighbour. For Greece (which was greatly influenced by Egypt): the wretchedness of man, the distance from God, and God's transcendence.

Greek history commenced with an atrocious crime, the destruction of Troy. Far from glorying in this crime as nations usually do, they were haunted by the memory of it, like a remorse. From it they derived the sense of human misery. No people has expressed as they did the bitterness of human misery.

At the threshold of Zeus there stand two jars
Wherein are the gifts he bestows, the evil in one and
the good in the other.

Those for whom Zeus the Thunderer mixes his gifts
Are sometimes in misfortune, sometimes in prosperity.
He who receives the evil gifts is made a prey to shame,
Dreadful hunger chases him forth across the holy earth;
He wanders, honoured neither by gods nor men.[1]

There is no purer, bitterer, and more poignant picture of human misery than the *Iliad*. The contemplation of human misery in its truth implies a very high spirituality.

The whole of Greek civilization is a search for bridges to relate human misery with the divine perfection. Their art, which is incomparable, their poetry, their philosophy, their science (geometry, astronomy, mechanics, physics, biology) which they invented, were nothing but bridges. They invented (?) the idea of *mediation*. We have kept those bridges, as something to look at. But we possess hardly a trace of Greek spirituality earlier than Plato.

Yet here are a few fragments. An Orphic fragment:

You will find near the abode of the dead, on the left, a spring.
Near it there rises a cypress tree, all white.
Do not go near that spring, do not approach it.
You will find another spring which flows from the lake of Memory,
Cold, gushing water. There are sentinels before it.
Tell them: 'I am the child of Earth and the starry Heaven,
But Heaven is my origin. You yourselves know that.
I am consumed and dying with thirst. O give me quickly
The cold water which springs from the lake of Memory.'
And they will allow you to drink from the divine source,
And then you will reign among all the heroes.[2]

This is the same Memory which is the principle of reminiscence in Plato and of 'remembrance of misery' in Aeschylus.[3] It is the knowledge of divine things. The white cypress is perhaps related to the Tree of the knowledge of good and evil which, according to the 'Quest of the Holy Grail', was entirely white.

There is contained already in this text a part of Greek

[1] *Iliad* xxiv, 527–33. The last three lines are S.W.'s own translation into English. (See *Seventy Letters*, p. 103.)
[2] H. Diels, *Fragmente der Vorsokratiker*, 5th ed., I, p. 415.
[3] *Agamemnon*, 180.

spirituality as we find it in Plato. It contains many things. That we are children of Heaven, which is to say, of God; that life on earth is a forgetting; that here below we are in forgetfulness of the transcendent and supernatural truth. And then that the condition for salvation is thirst; one must thirst for the forgotten truth until one feels one is dying of thirst. And finally that this thirst can certainly be quenched. If we thirst sufficiently for that water and if we know that it is for us, as children of God, to drink it, then it will be given to us.

Pythagoreans. The core of Greek civilization, and we know almost nothing about them, except through Plato.

Fragments of Heraclitus, Λόγος, Zeus, eternal fire, fragment of Cleanthes.

Hippolytus of Euripides: absolute chastity with a view to contact of mystical friendship with divinity.

Plato. There are two points to be understood about him:
(i) He was not a man who invented a philosophical doctrine. Unlike all other philosophers (without exception, I believe) he constantly reiterates that he has invented nothing and that he is simply pursuing a tradition, which he sometimes names and sometimes not. We must take his word for this.

He draws his thought sometimes from earlier philosophers of whom we possess some fragments and whose systems he has absorbed into a higher synthesis, sometimes from his master Socrates, and sometimes from secret Greek traditions about which we know practically nothing except from him—the Orphic tradition, the tradition of the Eleusinian mysteries, the Pythagorean tradition which is the mother of Greek civilization, and very probably some traditions from Egypt and other oriental countries. We do not know if Plato was what is best in Greek spirituality: nothing else has come down to us. Pythagoras and his disciples were doubtless even more marvellous.
(ii) We only possess of Plato his popular works, intended for the general public. They can be compared to the Gospel parables; and the fact that an idea is not found in them, or not explicitly, by no means allows us to suppose that it was not possessed by Plato and the other Greeks.

One must try to penetrate more deeply, taking advantage of

hints which are sometimes very summary and bringing together texts which are scattered in his work.

My interpretation: that Plato is an authentic mystic, and indeed the father of Western mysticism.

Texts concerning God.
(The remark about Θεοί, Θεός, ὁ Θεός. Θεοί: either he is joking, or else it must be divinity [cf. Elohim].[1] Or often something analogous to angels: finite beings, yet perfectly pure.)

Theaetetus, 176:
Theodorus: '*If Socrates, you convinced everyone as you do me, there would be more peace and fewer evils among mankind.*'
Socrates: '*But it is impossible that evil should disappear, Theodorus; for it is necessary that there should always be something more or less opposed* (ὑπεναντίον) *to the good. And this thing cannot have its seat among the gods, but it is obliged to hover around mortal nature and in this world. That is why we should strive to* flee *from this world as quickly as possible. This flight is, as far as possible, an* assimilation *to God, and assimilation consists in becoming just and holy through the aid of reason. But, my good friend, it is not easy to persuade men to flee sin and seek virtue except for the common reason, which is that men do not want to appear wicked but want to appear virtuous. Which is old women's nonsense in my opinion. The true reason is this:* God is never in any way unjust. *He is just in the highest degree, and no one among us is more like him than the man who is as just as possible. . . . The knowledge of this is wisdom and true virtue, and ignorance of it is folly and manifest wickedness. And the other seeming abilities and cleverness in public affairs and the arts are vulgar and mercenary. And as for those who commit injustices or behave impiously, it is much better not to admit that they can be formidable (clever) through (in) their wickedness; for they take pride in reproaches and think they are not regarded as triflers and "useless burdens on the earth" but as manly (virile) in the way necessary for keeping one's end up in a city. But the truth is that they are all the more what they don't think they are because they don't think it. For they do not know the penalty of injustice, which of all things is the last one should ignore. It is not what they think—such as*

[1] I.e. when Plato uses the plural, gods or the gods, he is either joking or else he is using the plural form to signify divinity, like the Hebrew *Elohim* (originally a plural word).

death, or beating, which the unjust do sometimes avoid—but something else which it is impossible to escape. . . . There are in reality two patterns, one of them divine and most blessed and the other godless and most wretched. But they do not see that this is so. Their stupidity and extreme ignorance prevent them from seeing that by their unjust actions they resemble the second pattern and differ from the first. They are punished by the fact that they live the life which matches the pattern they resemble.'

The principal ideas here are: *Flight.* cf. Pythagoras: He who departs, let him not turn back. (Violence of terror, June, 1940) —*Assimilation* (cf. geometry, *Epinomis*): *God is perfectly just.* The Greeks were *obsessed* with the idea of justice (on account of Troy?). They perished for having abandoned it. There are two moralities; one of them is external and human while the other, the real one, is supernatural and comes from God and is identified with the knowledge (γνῶσις, a Gospel word) of the highest truth (remark concerning the four virtues). The reward for good consists in the fact that one is good and the punishment for evil in the fact that one is evil; and the reward and punishment are *automatic* (*I do not judge; they condemn themselves*).

(*Very important consequence* of this 'assimilation'. Plato's *ideas* are the thoughts of God, or God's attributes.)

In other words: whereas in the domain of nature (including the psychological) good and evil endlessly and mutally produce one another, in the domain of the spirit evil produces only evil and good produces only good. (The Gospel.) And good and evil consist in contact with (contact by likeness) or separation from God. (Therefore there is no question of anything like an abstract conception of God, which can be achieved by the human intelligence without grace; the conception is an experimental one.)

What is this sort of justice? How can the imitation of God by a man be possible? We have an answer. It is Christ. But what was Plato's answer?

Republic, II, 360 ff. (cf. *Hippolytus* of Euripides):
'. . . *Let us deduct nothing either from the injustice of the unjust man or from the justice of the just man, but let us suppose each to be perfect in his own line of conduct.* [Everything succeeds for the unjust]. . . .

Consider the just man, simple and generous, and desiring, as Aeschylus said, not the appearance but the reality of justice. So we must take away from him the appearance. . . . He must be stripped naked *of everything except justice. Without ever committing an injustice, he must have a reputation for the greatest injustice, so that his justice may be proved by the fact that he will not be influenced* (τέγγεσθαι) *by his evil fame and its effects but will continue unflinchingly until death, going through life in the appearance of injustice but in the reality of justice . . . the just man so disposed will be scourged, tortured, enchained, his eyes will be burnt out, and at the end of all his sufferings he will be* [impaled] [crucified] *and then he will know that what is desirable is not the reality but the appearance of justice. . . .'*

Adeimantus thinks that even salvation and damnation should be abstracted from the argument.

'So do not confine yourself to the proposition that justice is worth more than injustice, but show us by what process each by itself makes the man who possesses it either good or evil. And you must take away their appearances. You must subtract from each its real appearance and give it the opposite one; for otherwise we shall say that you are not praising justice but the appearance of justice. . . . Therefore do not show us simply that justice is worth more than injustice, but by what process justice in itself and by itself makes him who possesses it good, and that it does this irrespective of whether it is manifest or whether it is hidden both from gods and men.'

Suppress the appearance of justice even as regards God. Let the just man be abandoned even by God.

We find this same image of nakedness again in the *Gorgias*, linked with the image of death.

Gorgias, 523a:

'Listen to a very beautiful story. You will think it is a fable, but I think it is a true story. I will tell it you as something true. . . . [Long ago] *judgement used to be passed by the living upon the living; each man was judged on the day of his death. That is why the judgements were often bad. So Pluto and the guardians of the Isles of the Blest came and reported to Zeus that undeserving men were coming to both places. Then Zeus said: "Well, I will put a stop to that. The judgements are bad at present; and it is because those who are tried have*

their clothes on, since they are tried while still alive. Now many of those who have criminal souls are clothed with fair bodies and nobility and wealth, and at the judgement a lot of witnesses appear with them to testify that they have lived justly. The judges are impressed by all this; and the more so because they too are clothed. Their eyes and ears and their whole body makes a veil in front of their soul. All this stands in their way; their own clothes and those of the men on trial. First, then, they must no longer be allowed to know in advance the hour of their death, for at present they know it. Let Prometheus *be told to put a stop to it. Next, they must all come to trial naked, so they must be judged after death. The judge too must be naked, dead; with his soul itself he must contemplate the soul itself of each man the moment after his death, without his friends and relations or any of his earthly array, if the judgement is to be just. I, knowing these things before you, have appointed my sons as judges . . . and after their death they shall sit in judgement in the meadow at the cross-roads whence the two roads lead, the one to the Isles of the Blest and the other to Tartarus."*

'. . . Death, as it seems to me, is nothing but the parting from one another of two things, the soul and the body; and, when they are separated, each is in much the same state as when the man was alive. . . . If anyone's body was large . . . his corpse will be large . . . and so on. . . . If anyone's living body showed weals from flogging or scars from blows and wounds, they can be seen also on his dead body. . . . It seems to me that the same is true of the soul. When it is naked and stripped of the body, its natural dispositions and the effects upon it of all its attachments to things become apparent. When they reach the tribunal . . . [the judge] *looks at each man's soul without knowing whose it is; then often, coming upon the soul of the Great King, or of some other king or potentate, he sees that because of its perjuries and injustices it is covered with the lash marks and scars with which each act has marked it, and that it is all twisted by lies and vanity and that nothing in it is upright because it has been reared without truth.'*

(527c.) *'So be persuaded by me and follow me to the place which ensures, when you get there, a happy life and a happy death. And let anybody despise you as a fool and insult you if he wishes; and even, by Zeus, put up with that famous unrequited blow; it won't be so terrible if you are really good and noble and practised in virtue.'*

We find in this text:

(1) Once again, the idea that judgement is nothing else but the

expression of what each man really is. It is not a valuation of what the man has done, but a statement of what he is. Evil actions are only reckoned by the scars which they leave on the soul. There is nothing arbitrary about it, but a rigorous necessity.

(2) The image of *nakedness* linked with that of death (the oldest text? . . .). This double image is pure mysticism.

There is no man so wise, so perceptive, and so just that he is not influenced by the physical aspect and even more by the social position of other people (*if you suppose* . . .). The effect of imagination. No one is unaffected by clothes. Victory or defeat, etc.

All this obscures the truth. *The truth is secret.* (*Thy father which is in secret* . . .).[1] Truth is only manifested in nakedness and *nakedness is death; it is the breaking of all the attachments which constitute every man's reason for living*: the people he loves, public esteem, possessions both material and moral, everything.

Plato does not say but he implies that in order to become just, which requires self-knowledge, one must become, already in this life, naked and dead. The examination of conscience demands this rupture of all the attachments which constitute our reasons for living.

Moreover, he says explicity in the *Phaedo*:[2]

'*Those who apply themselves rightly to the pursuit of wisdom aim at nothing else but to die and be dead. . . . Death being nothing else than the fact of the soul being separated from the body. . . . The soul of the philosopher despises the body and escapes far from it and seeks to be alone with itself. . . . If we are ever to know anything purely we must separate ourselves from the body and contemplate things by the soul itself. . . . And it is only then, so it seems, that we shall possess what we desire and what we say we love, namely reason; that is to say, after death and not while we are alive. For if it is impossible by means of the body to know anything purely then it follows either that we shall never possess knowledge, or else after death; for then the soul will subsist in itself and by itself and apart from the body, but not before. And while we are alive it seems that we shall be closer to knowledge the less commerce and communion we have with the body, apart from strict necessity; not letting ourselves be possessed by its nature but purifying*

[1] Matthew 6. 6.

[2] *Phaedo*, 64a–67d.

ourselves from it until God himself releases us. . . . Purification consists in separating the soul as much as possible from the body, setting it alone by itself without any contact with the body, accustoming it to collect and recollect itself and to dwell so far as possible both now and in the future alone with itself and as if released from the shackles of the body. . . . And is not this release and separation of the soul from the body called death?'

It is almost certain that this two-fold image of nakedness and death as symbol of spiritual salvation comes from the traditions of those secret cults which were called in antiquity the mysteries. Babylonian text of Ishtar in hell. Seven gates: '*At each of them one rids oneself of something.*' Meaning of the image of the gate: knock and it shall be opened unto you. Osiris, and therefore also Dionysus, dead and resurrected. —Descent into hell as initiation.

Role of this double image in Christian spirituality: Death, St. Paul; nakedness, St. John of the Cross, St. Francis.

If justice requires us to be naked and dead in this life, it is clear that justice is something impossible for human nature, is something supernatural.

What prevents the soul from assimilating itself to God through justice is primarily the flesh, of which Plato said, following the Orphics and Pythagoreans: '*The body is the tomb of the soul.*'[1]

Philolaus: '[We know] *by the testimony of the ancient theologians and prophets that it is because of punishment that the soul is chained to the body and, as it were, buried in this tomb.*'[2]

Numerous texts of Plato on the peril of the flesh.

Plato also took from the Pythagoreans another image, which compares the sentient and carnal part of the soul, the seat of desire, to a cask whose bottom is in some cases intact and in others holed. For those who have not received the light the cask is holed and they are incessantly pouring into it everything they can, without ever being able to fill it.[3]

But there is an even greater obstacle than the flesh; it is society. For this there is a terrible image. It is an idea of the first importance in Plato and it runs through all his work, though it is explicitly stated only in the following passage, for reasons which the text itself will explain. Its importance is never sufficiently emphasized.

[1] *Gorgias*, 493a; *Cratylus*, 400c. [2] Diels, op. cit., p. 414. [3] *Gorgias*, 493a–494a.

'*Do you believe, like the crowd, that a few young men are corrupted by the sophists and that a few particular sophists corrupt them, and that this is of any real account? Is it not rather those who complain about this who are the chief sophists, who control education and mould everybody, men and women, young and old, according to whatever pattern they wish? —But when? he asked—Whenever, said Socrates, a crowd of people are gathered together in an assembly, a tribunal, a theatre, a camp, or any great meeting-place, and they tumultuously blame or approve what is said or done. They blame or praise to excess, they shout and clap, until the din of their praise and blame is redoubled by the echo of the surrounding rocks and buildings.*'

N.B. This seems to apply to Athens in particular, but it must be transposed. The sequel shows that Plato is thinking of every kind of social life without exception.

'*In such circumstances, how will a young man's heart be moved? What individual education could resist and not be submerged and swept away in the torrent of blame and praise? So he will decide, according to the opinions of others, that certain things are beautiful and certain others disgraceful; he will share the same pursuits as the others, and become like them.—The compulsion would be powerful, Socrates—And yet, said Socrates, I have still not mentioned the strongest compulsion—What is it?—The compulsion exerted by these educators, these sophists, on those whom they fail to persuade. Don't you know that they punish with disgrace and fines and death those who resist their persuasion? What other sophist then, or what simple argument, could hold out against them? No, indeed, and even the attempt would be the height of folly.*

'*For there is not, there never has been, and there never will be, any other moral teaching except that of public opinion. At least, no other human teaching; the divine, as the proverb says, is an exception to all rules. It is necessary to know that anything which is saved and becomes what it ought to be, in the present state of society, must correctly speaking be said to have been saved by a divine predestination* (Θεοῦ μοῖραν)'.[1]

N.B. It would be impossible to assert more categorically that grace is the only source of salvation, that it is from God and not from men that salvation comes. The allusions to tribunal, theatre, etc., which refer to Athenian customs, might suggest

[1] *Republic*, VI, 492a–493a.

that the conception does not have a general bearing; but the words '*there is not, there never has been, and there never will be . . .*' are proof to the contrary. The herd imposes its values, in one way or another, in all societies without exception. There are two moralities, social morality and supernatural morality, and only those who are enlightened by grace have access to the second.

Plato's wisdom is not a philosophy, a research for God by means of human reason. That research was carried out as well as it can be done by Aristotle. But the wisdom of Plato is nothing other than an orientation of the soul towards grace.

'*As for those individuals who give paid lessons, they are called sophists and regarded as rivals. But all they teach is the opinions of the herd, the opinions which arise when a crowd is assembled; and this is called wisdom. Imagine, for example, some great powerful beast; its keeper studies its humours and desires, and how to approach and handle it, and at what times and for what reasons it is fierce or gentle, and which of its cries correspond to each mood, and which words will soothe or excite it. And suppose that having learnt all this by practice in the course of time, he calls the result wisdom and systematizes it as a doctrine. But in reality he has no idea as to which of these notions and humours is beautiful or ugly, good or bad, just or unjust; he applies these terms to the opinions of the great beast. Whatever pleases the animal he calls good and whatever annoys it he calls bad, and this is his only criterion. Things that are necessary he calls just and beautiful, for he is incapable of perceiving or of explaining to anyone else* how great the difference is in reality between the essence of what is necessary and of what is good.

'*Would not this be a strange teacher? But he differs in no way from the man who thinks he can regard as wisdom the likes and dislikes of an ill-assorted multitude in assembly, whether as regards painting or music, or politics as well. And if a man associates with the multitude, offering them poetry or any other work of art or of politics, and if he puts himself in their power, except in the sphere of the necessary, then he will find himself irresistibly compelled to conform to what the multitude approves.*'[1]

This great beast, which is the social animal, is quite obviously the same as the beast of the Apocalypse.

[1] *Republic* VI, 493a–d.

Plato's conception of society as the obstacle between man and God, a barrier which only God can cross, may also be compared with the devil's words to Christ in St. Luke:

'*He showed him all the kingdoms of the world in a moment of time. And the devil said to him: All this power I will give thee, and the glory of them: for that is delivered unto me, and to whomsoever I will give it.*'[1]

In parenthesis, it is implied by this theory that society is essentially evil (on which point Macchiavelli, like almost all the men of the Renaissance, was simply a disciple of Plato) and that the only reasonable aim in reforming or changing society is to reduce the evil as much as possible. Plato had understood this, and his construction of an ideal city in the *Republic* is purely symbolic. This is frequently not understood.

Richelieu's remark. Macchiavelli. Marxism, or as much of it as is true.—Irreducible evil, which one can only attempt to limit. Rule: not to submit to society beyond what is inevitable.

It is difficult to grasp the full import of this conception of Plato's because one does not know how far one is enslaved by social influences. By its very nature this slavery is almost always unconscious, and at the moments when it does become conscious one can always disguise it by lying to oneself.

Two remarks, to throw a little light:

(1) The opinions of the great beast are not necessarily opposed to the truth. They are formed by chance. *The beast likes some bad things and dislikes some good things; but on the other hand there are some good things which it likes and some bad things which it dislikes.* But even where its opinions are *in accord with the truth they are essentially alien to the truth.*

For example: If one wants to steal and refrains, there is a great difference between refraining through obedience to the great beast or through obedience to God.

The trouble is that one may very easily say one is obeying God when one is really obeying the great beast. Because words can always be used as labels for anything.

So the fact that one thinks or acts in conformity with the truth in some respect is no proof that one is not enslaved to the great beast in that respect.

[1] Luke 4. 5–6.

All the virtues have their reflections in the morality of the great beast except humility—which is the key to the supernatural. Therefore it is mysterious, transcendent, indefinable, and unrepresentable. (Egypt.)

(2) The fact is that everything which makes up our education *consists exclusively of things which at one time or another have been approved by the great beast.*

Racine. *Andromaque* and *Phèdre*. If he had begun with *Phèdre* . . .

History; the men whose names have come down to us were made famous by the great beast. Those whom it does not make famous remain unknown, both to their contemporaries and to posterity.

Note, finally, that the censure of the great beast had the power to cause all Christ's disciples without exception to abandon their master. Since we are worth far less than they, it is certain that the great beast has at least as much power over us, without our realizing it (which is much worse)—and at every moment—at this very moment. And that part of us which it possesses, God does not possess.

Having recognized that grace emanating from God is necessary, what does it consist in and by what methods is it accomplished and how does man receive it? Texts: *Republic*, *Phaedrus*, *Symposium*. Plato makes use of images. The fundamental idea of these images is that the disposition of the soul which is granted and receives grace is nothing else but love. The love of God is the root and foundation of Plato's philosophy.

Fundamental idea: love oriented towards its proper object, that is to say, towards perfection, puts the lover in contact (*contact*) with the only absolutely real reality. Protagoras said: *Man is the measure of all things*. Plato replies: *Nothing imperfect is the measure of anything*[1] and *God is the measure of all things.*[2]

The good is above justice and the other virtues; it is in so far as they are good that we seek the other virtues.

Symposium: '*It is not true to say that a man cherishes what belongs to himself* (no egoism). *There is no object of desire for man except the good.*'[3]

[1] *Republic*, VI, 504c. [2] *Laws*, IV, 716c. [3] *Symposium*, 205e–206a.

'It is clear that as regards justice and beauty many people prefer appearances; and even if there is no reality in them they are still interested in possessing and discussing these appearances. But when it comes to the good, then no one is content with the mere semblance of it. Everybody seeks the reality, and despises mere opinion about it. The good is what every soul seeks and is the motive of its actions; it has an intuition of its reality but is unsure and incapable of adequately grasping what it is; and in this matter, unlike other matters, it cannot reach a firm belief.'[1]

(Something more than a belief is needed. . . .)

Socrates says he will explain the good by means of an image.

Republic: comparison between the good and the Sun. (Note that the Sun was an image of God for the Egyptians; and that in Peru, before the country was discovered and destroyed by the Spaniards, the Sun was adored as the sole divinity and regarded as the symbol of God, who was held to be too exalted to be the direct object of worship.)

'There are many beautiful things, many good things, and so on. But when we speak of the beautiful in itself, the good in itself, and so on, we establish what each of these things is according to the single idea of a single essence. We see things, but we do not conceive them (νοεῖσθαι); *we conceive ideas, but we do not see them. Things which are visible we see by vision; but when there is a visible object and an eye with vision there is still something lacking. Though the eyes possess vision and try to use it, and though the objects possess colour, nevertheless the eye will not see and the colour will not be seen unless there is a third thing specifically adapted for vision; that is to say, light. . . . The sun is vision; it is not the organ of vision which we call an eye. But of all the sense organs the eye is what most resembles the sun.'*

Parenthesis on νοῦς and νοητός:

'I called the sun the offspring of the good, engendered by the good as something analogous to itself. For in the spiritual (νοητός) *world the good is to the spirit* (νοῦς) *and to spiritual things* (νοούμενα) *what the sun is in the visible world to vision and visible objects.*

'When the eyes are not turned upon objects coloured by daylight but upon objects seen at night they become dim and almost blind, as if they had no clear vision. But whenever they turn towards objects

[1] *Republic*, 505d–e.

lit by the sun they see clearly and it is obvious that they possess vision.

'It is the same with the spiritual eye of the soul. Whenever it is turned towards something that shines with truth and reality it conceives (ἐνόησε) *and knows and is manifestly spirit. But when it turns towards what is mixed with darkness, the world of becoming and perishing, it has only opinions, it becomes dull, its opinions are muddled, and it seems not to be spirit.*

'Of that which, for the objects of knowledge, is the source of truth and, for the knower, the source of the power to know, we must say that it is the cause (ἀιτίαν) *both of knowledge and also of truth in so far as it is an object of knowledge. Both knowledge and truth are beautiful things but, rightly speaking, the idea of the good is something more beautiful still. One may rightly regard light and vision in this world as being sun-like things, but not as the sun itself; and in the same way one may rightly regard knowledge and truth as being like the good, but not as the good itself. That which constitutes the good should be even more highly honoured.*

'To consider still further the likeness of the good. The sun not only makes it possible for visible objects to be seen; it also gives them their becoming, their growth and their nurture, although it is not itself a becoming. In the same way for objects of knowledge, the good not only makes it possible for them to be known, but it also gives them reality and being (τὸ εἶναι καὶ τὴν οὐσίαν), *although it is not itself a being but something even higher than being in dignity and worth.'*[1]

The real and the imaginary in the spiritual life.

'Do not suppose that education is what some people proclaim it is, for they assert that they can put knowledge into a soul which does not possess it, as though they were putting sight into blind eyes. But our argument has shown that the faculty of learning and the organ of this faculty exist in every soul. But it exists there like an eye which cannot be turned towards the light and away from the shadows unless the whole body turns with it. In the same way it is with the whole soul that one must turn away from becoming (from the temporal) *until it becomes able to bear the contemplation of* reality (τὸ ὄν) *and of what is most luminous in reality, namely the good. So what is required here is a* method *of conversion, providing the easiest and most effective way of changing the soul's direction. It is not at all a method for putting vision into the soul. For the soul already possesses vision but does not direct it*

[1] *Republic*, VI, 507b–509b.

rightly; it does not look in the right direction, and that is what has to be brought about.'[1]

A few remarks.

Vision is intelligence; its right orientation is supernatural love.

Although Plato expresses himself in strictly impersonal terms, this good which is the author both of intelligibility and of the being of truth is nothing other than God. But Plato uses the word *author* so as to indicate that God is a person. To act is to be a person.

By using the expression 'the good' when he refers to God, Plato expresses as strongly as it is possible to do that for men God is the object to which love directs itself.

'*The good is what every soul seeks, having an intuition of its reality but not knowing what it is.*'[2]

Cf. St. Augustine: *God is a good which is nothing else but good.* This is Platonism.

Two ideas:

(1) THERE IS NOT AND THERE CANNOT BE ANY OTHER RELATION OF MAN TO GOD EXCEPT LOVE. WHAT IS NOT LOVE IS NOT A RELATION TO GOD.

(2) The appropriate object for love is God, and *every man who loves something other than God is deceived, mistaken; as though he ran up to a stranger in the street, having mistaken him for a friend.*

Further, it is only in so far as the soul orients itself towards what ought to be loved, that is to say in so far as it loves God, that it is *qualified to know and understand.* Man cannot exert his intelligence to the full *without charity,* because the only source of light is God. Therefore the faculty of supernatural love is higher than the intelligence and is its condition. *The love of God is the unique source of all certainties.* (Plato's philosophy is nothing else but an act of love towards God.)

That being (reality) which proceeds from the good is not the material world, for the material world is not being but is a perpetual interchange of becoming and perishing. It is change. Nor does the being which proceeds from the good consist of

[1] *Republic*, VII, 518b–d.

[2] *Republic*, VI, 505e.

those conceptions which our intelligence is able to manipulate and define; because later on Plato compares the most precise of these notions to shadows, to images reflected in water.

In relation to nature and human intelligence this being is transcendent. And the light which illumines it is not of the same nature as the intelligibility of the sciences which are within our scope. The light, too, is transcendent.

It seems difficult, therefore, not to regard both this being and this light as God. And it seems difficult to interpret these three notions, of the good and of being and of truth, in any other way than as a conception of the *Trinity.* (The Good corresponding to the Father, and being to the Son, and truth to the Holy Ghost.)

Cf. the *Parmenides*, 143e. If there is the one, then there is the one and being and the link between the two (and hence all the numbers). But this is purely abstract. (If the one is really one it does not exist at all.)[1]

We know from Aristotle that one of the names which Plato gave to God was the One.

It is evident that Plato considers true wisdom to be something supernatural. It would be impossible to express more clearly than he does the contrast between the two possible conceptions of wisdom. Those who regard wisdom as something which human nature is able to acquire believe that when somebody has become wise it means that a human effort has put into him something which was not there before.

Plato, on the other hand, thinks that the man who has attained to true wisdom has nothing more in him than before, because the wisdom is not in him but is coming into him all the time from elsewhere, that is to say, from God. All the man has done is to turn towards the source of wisdom, to become converted.

What a man can do for another man is not to add something to him, but to turn him towards the light that comes from elsewhere, from above.

The light of the truth, therefore, is inspiration.

Intelligence resides in every man. But the condition for using the intelligence is supernatural love (the doctrine is not an intellectualist one, but quite the contrary).

[1] Cf. Plato, *Parmenides*, 143b: 'Must not the being of one be other than one?'

But whereas we can turn our eyes in a new direction without or almost without using the body, it is not so as regards the soul. The soul cannot turn its eyes in a new direction without turning entirely in that direction.

Therefore, in order to turn its eyes towards God the entire soul has to turn away from the things which are born and perish, from temporal things (exact equivalence). The entire soul—including therefore its sentient and carnal part which is rooted in the things of sense and draws life from them. It must be uprooted. And this is death. And this *death* is what conversion is.

The loss of anything or anyone we are attached to is directly experienced as a sense of dejection which corresponds to a loss of energy. And what we have to do is to lose *all the vital energy which is supplied to us by all the things and all the people we are attached to*. So it really is a death.

Thus it is total detachment that is the condition for the love of God, and when once the soul has performed the motion of totally detaching itself from the world so as to turn entirely towards God, it is illumined by the truth which comes down to it from God.

This is the very same idea that is at the centre of Christian mysticism.

Note that it must be the *entire* soul. Cf. St. John of the Cross: the slightest attachment is enough to prevent the soul's transformation. *Just as the wood fails to ignite if the heat is a single degree too low; just as the bird cannot fly while it is attached by the slenderest thread.* Plato expresses this by the simple phrase: the *entire* soul. (Cf. the Stoics.)

What is the process of conversion? And, to begin with, what is man before he is converted? The image of the Cave. A terrible image of human misery. *This is what we are like* (not what we used to be like. . .).

'*Think of men dwelling in an underground cave which is open to the light along its entire width. They have been in this cave since childhood, with their legs and necks fettered, so that they have to remain motionless, looking straight in front of them and prevented by the fetters from turning their heads. There is light from a fire burning high up and some way behind them; and between the fire and the men in fetters is a raised gangway along the side of which a low screen has been*

erected, like that behind which a showman conceals himself when he exhibits his puppets. Now imagine men passing along behind this screen carrying all sorts of figures so that they show above the screen, figures of men and animals in wood and stone and all sorts of artificial objects; the carriers as usual sometimes talking and sometimes not.'

' "*What a strange image,*" *said Glaucus,* "*and what strange fettered prisoners.*" "*They are like us,*" *said Socrates,* "*and do you think they would see anything of themselves and one another except the shadows thrown by the fire onto the wall of the cave in front of them?*" "*How could they,*" *said Glaucus,* "*if they were obliged to look straight in front of them all their lives?*" "*And the same would apply to the figures being carried past. And if the prisoners could discuss together they would necessarily imagine that by giving names to what they saw they were naming actual objects; and if the cave had an echo, when one of the image-carriers spoke they would think the sound was made by the passing shadow. And in a general way these prisoners would think that there was nothing real except the shadows of artificial objects.*

'*Now consider what the release and healing from their bonds and their folly would be, if it came about in the course of nature. When one of them was unbound and suddenly* compelled *to stand up, turn his head, walk, and look towards the light, each of these actions would be painful and he would be too dazzled to be able to see the objects of which previously he had seen only the shadows. What would he say if someone told him that all he had seen before was foolishness and that he was now closer to the real, turned more in the direction of reality, and looking in a better direction? If he was made to look at each of the objects being carried along and was asked what it was and compelled to reply, he would not know what to say and would think that what he had seen before was truer than what he was now being made to look at. And if he was compelled to look at the light itself it would hurt his eyes and he would turn back to the things he was able to see and would find them really more distinct than what he was now being shown. And if he was dragged by force out of the cave up a rugged and steep ascent into the light of day, it would be torture to him and he would resist; and when he had been forced into the sunlight its brilliance would dazzle his eyes and he would be unable to see a single one of the things which we call real. He would need to get accustomed before he could lift his eyes and at first he would find it easier to look at shadows and at the reflections of men and things in water, and later at the objects themselves. Next he would find it easier to look at the things in the sky and at the sky itself*

by night, contemplating the light of moon and stars but not the sun and its light by day. But at last, I think, he would be able to look directly at the sun, not as reflected in water and elsewhere, but the sun itself, as it is in itself, in its own proper place and as it is. [State of perfection. Cf. St. John: Καθώς ἐστιν] *And then he would reach the conclusion that it is the sun itself which produces the seasons and years and regulates everything in the visible world and is in a certain manner the cause of everything he sees.*'[1]

From the little that we know about the mysteries it is very probable that this image is taken from their traditions and it may even be that one of the rites consisted in being chained for a time in an underground vault.

(Cf. the *Hymn to Demeter.*)

As a picture of human misery, it would be impossible to go further.

We are born *under punishment.* A Pythagorean idea. Nothing is said about original sin, but the whole description implies such an idea by its penitential and prison-like atmosphere.

We are born and we live *in falsehood.* We are offered nothing but lies. And this even includes our own selves; we think we perceive ourselves, but all we see is our shadow. The precept 'Know thyself' is not practicable in the cave. All we see is the shadow of the artificial. The world in which we exist and of which we see only the shadows (appearances) is an artificial thing, a show, a simulacrum. A contrast calling for meditation: the intelligible world, or being which is really being, is *produced by* and emanates from the supreme Good; whereas the material world is an *artefact.*

It would be impossible to set a greater distance between our universe and God.

(This material world, we note in passing, is *within* the intelligible world, which is infinitely more vast. No one could be further than Plato from pantheism, from putting God within the world.)

We are born and live *in passivity.* It is not we who move, but images pass before our eyes and we live them. And we make no choices. What we live at any moment is what is offered us by the puppet-master. (We are not told anything about him. . . .

[1] *Republic,* VII, 514a–516c.

The Prince of this world?) We possess absolutely no freedom. One is free after being converted (and even during the process), but not before. As Maine de Biran said, we are modified.

The talking cinema is very much like this cave. Which shows how much we love our degradation.[1]

We are born and live *in unconsciousness.* We are unconscious of our misery. We are unaware of being under punishment, of being in falsehood, of being passive, and, of course, of being unconscious. And this is exactly how it would be if the fable were literally true. The prisoners it describes would be attached with all their soul to their captivity. The degradation of affliction always has this effect: the soul clings to it until it is no longer capable of detaching itself (ersatz of resignation). Such is the effect of that general affliction, common to all men, which is to be a human being.

If the shadows passing across the wall have terrifying shapes, the fettered prisoners are distressed; but they have not the faintest conception of what constitutes the real essence of their misery—which is their total dependence upon the passing shadows and their error in believing that those shadows are real.

So conversion is no light or easy matter. Getting rid of one's chains is the least part of it.

One might put it that the chains have fallen away as soon as a human being receives—either through inspiration or by the instruction of another, whether oral or written (it is often a book)—the idea that this world is not everything, that there is something else which is better, and that one must seek.

But one no sooner begins to stir than one is hampered by inertia and stiff joints, and the slightest movement is an unbearable pain. This comparison is marvellously exact.

At this point there is a way of making things very easy for oneself. If the instructor who caused our chains to drop off has told us a wonderful tale of the world outside with its plants and trees and sky and sun, then all we have to do is to keep still and close our eyes and imagine we are leaving the cave, climbing out of it and seeing all these things. And to add colour

[1] *Translator's note:* This observation is so strangely true that it seems worth emphasizing. In an age without photography it would be impossible to conceive anything more like the cinema than Plato's description of moving shadows projected on to a wall by passing a series of images across a light placed behind the spectators (the captive audience . . .).

to our imagining we may also imagine we feel some of the pain which the climb involves.

By this method we procure a very pleasant life and a lot of self-satisfaction, and all at no cost.

Whenever we think we have had a conversion without a certain minimum amount of violence and pain, it means that the conversion has not yet really taken place. The chains have fallen off, but we have stayed where we were and our movement has been imaginary. But what is the criterion? The feeling of effort and pain proves nothing, because there can be imaginary pains and efforts. And, as for an inner conviction, nothing is more misleading. There must be some other criterion.

It is indicated in Plato's image that conversion is a violent and painful operation, a rending, and that it involves an irreducible quantity of violence and pain, of which not even the smallest fraction can be foregone. Unless the full price is paid the operation fails, even though only a very small part is held back. In everything that is real there is an irreducible element.

Plato shows the successive stages of the operation.

The prisoner freed from his chains walks through the cave. He perceives nothing, and he is in fact in semi-darkness; and in any case it would serve no purpose if he stopped to examine his surroundings. He has to continue walking, no matter how painfully and although he is ignorant of where he is going. At this stage only the will is involved and the intelligence plays no part. Every step costs a fresh effort, and if the effort fails before one is out of the cave one will never get out, even though there was only one more step to take. The last steps are the hardest.

Such is the role of the will in salvation. An effort in the void, an effort by a will which is both unhappy and blind, for it is without light.

(Note particularly that so long as one is in the cave and even when one has gone a long way towards the threshold, even at one pace from the threshold, *one has no idea of God.*)

Once out of the cave one's pain is even sharper, because of the brilliant light, but one is in safety. (Unless, of course, one commits the folly of re-entering the cave; in which case all must be done again, from the beginning.) No further efforts of will

are needed; one has only to remain in a state of attention and contemplate something whose dazzle is almost unbearable. From then on, if one continues to contemplate with attention, the mere passage of time will confer a greater and greater capacity for receiving light.

There are two periods of horror when one has no longer any sense of direction and believes one is lost. The first is in the cave, after being freed, when one has turned round and begun to walk; and the second, much more violent, when one emerges from the cave and feels the shock of the light.

These two periods correspond exactly to the two 'dark nights' described by St. John of the Cross, the night of sense and the night of spirit.

[This comparison is so exact that it is very difficult not to think that it condenses generations of mystical experience.]

The final moment, when the emancipated being looks upon the sun itself, the good itself, that is to say God himself, as he really is, corresponds to what St. John of the Cross calls the spiritual marriage.

But in Plato this is not the end. There is a further stage (also in fact indicated by St. John of the Cross).

'*It is the duty of us who are city-founders to compel the better natures to attain the highest knowledge, which is the vision of the good, and to make that ascent; and once they have gone up and seen properly we must not allow them to do what is at present allowed, namely, to stay above without wanting to descend again among the prisoners and share their more or less unworthy labours and dignities.* [Beyond the gunas.] *The law is not concerned with the exceptional success of one category of citizens but with establishing, both by persuasion and compulsion, a harmony among the citizens according to the capacity of each to serve the common good. The law raises such men in the city, not so that each of them may take whatever course pleases him, but with a view to using them as a binding force to unite the city. We do no injustice to those among us who have become philosophers; what we shall say to them is just. . . . "We have raised you to be, both for yourselves and for your fellow-citizens, leaders and, as it were, king-bees in the hive. We have trained you better and more perfectly than the others and made you more apt for both kinds of life. You must therefore come down again, each in his turn, into the common habitation and get used to descrying*

among shadows. For once you are accustomed you will see a thousand times better than the dwellers below; you will recognize each appearance and know what it represents and what it is, because you have contemplated the truth of things beautiful and just and good. And thus we and you together will inhabit this city in a state of wakefulness and not in a dream as at present; for the majority of cities (*i.e.* souls) *are inhabited by people who fight shadow fights with one another and wage party strife for the possession of power, as though that were a great good. Whereas the truth is that the city in which those who are to be rulers are the least anxious to rule is the best and most peaceful, and the contrary under the opposite system.*" [Non-active action.] *When we say this to those whom we have trained, will they disobey? It is impossible, because we are imposing just obligations upon men who are just.*'[1]

We must remember that this city is a fiction, is purely a symbol representing the soul. Plato says so: '*Perhaps there is a model of it in heaven for whoever wishes to see it and, seeing it, to found the city of his own self.*'[2] The different categories of citizen represent the different parts of the soul. The philosophers, those who come out from the cave, are the supernatural part. The entire soul must detach itself from this world, but it is only the supernatural part which enters into relation with the other world. When the supernatural part has seen God face to face it must turn back to rule the soul, so as to keep the whole of it awake, whereas in those whose deliverance has not been accomplished it is in a state of dreaming. The natural part of the soul, detached from this world and with no way of reaching the other, is *in the void* during the process of deliverance. It must be restored to contact with this world, which is its own; but to a legitimate contact which stops short of attachment.

In short, after having torn the soul from the body and having passed through death to approach God, the saint must incarnate himself, as it were, in his own body so as to shed upon this world, upon this earthly life, a reflection of the supernatural light; so as to make a reality of this earthly life and this world, for until then they are only dreams. It falls to him, in this way, to complete the creation. The perfect imitator of God first disincarnates and then incarnates himself.

[1] *Republic*, VI, 519c–520e.

[2] *Republic*, IX, 592b.

Now, in what does that contemplation consist by which the soul of him who has left the cave becomes accustomed to the light? Evidently there are several ways, and in the *Republic* Plato indicates one of them, which is an intellectual way.

For the transition from darkness to the contemplation of the sun there is a need of intermediaries, or μεταξύ. The ways differ according to the chosen intermediary. The *Republic* describes the way distinguished by the intermediary of *relation*. The role of the intermediary is, first, to be at a point half-way between ignorance and the plenitude of wisdom, between temporal becoming and the plenitude of being (it is 'between' in the manner of a geometric mean, because the process is that of the assimilation of the soul to God). And then it also has *to attract the soul towards being, to evoke the faculty of thought.*

In the intellectual way, it is contradiction which evokes thought. In other words, it is relation, ratio. For wherever there is the appearance of contradiction there is a correlation of contraries, that is to say, there is relation. Whenever the intelligence is brought up against a contradiction, it is obliged to conceive a relation which transforms the contradiction into a correlation, and as a result the soul is drawn upwards.

For example: *Theaetetus.*[1] The knuckle-bones (4, 6, and 12). So mathematics is the science of this kind of ratio. Four branches: arithmetic, geometry, astronomy, music (the two latter as mathematics, not from observation. Cf. Plato's question about the stars).[2]

These sciences are without value in themselves. They are intermediaries between the soul and God.

'*It is the deliverance from bonds, and turning away from the shadows to the images* [*puppets*] *which cast them, and to the light, and then the climb out of the cave towards the sun; and there, through inability to look directly at animals, plants, and sunlight, it is the contemplation of the reflection in water of the divine images and the shadows of real things; but it is no longer the contemplation of the shadows of puppets. . . .*

'*Such is the efficacy of the sciences we have mentioned for inducing the best part of the soul to contemplate what is best in true being.*'[3]

[1] *Theaetetus*, 154c.

[2] Possibly a reference to *Republic*, VII, 529c–530c.

[3] *Republic*, VII, 532b–c.

Further on he says:

'*The sciences which we have said to have some apprehension of true being, namely geometry and those that go with it, are indeed, as we see, dreaming about the really existent. But they are incapable of seeing it in wakefulness because they make use of hypotheses* (*i.e.* axioms and postulates) *which they leave untouched and of which they can give no account. . . . It is only the dialectical method that dispenses with hypotheses and directs the soul's eye towards the first principle itself.*'[1]

What comes after these sciences? Something which Plato calls dialectics, but concerning which he is very reticent. It consists in trying to *render an account* of the sciences themselves. It is necessary '*by pure reason and quite unaided by the senses, to strive to see what each thing is in itself, and not to cease before having grasped, by the intelligence itself, the nature of the good in itself*'.[2]

Beyond this, one can only guess from a few scattered allusions elsewhere.

Greece possessed *a mysticism in which mathematical relations were the basis for mystical contemplation. Very singular.* (Cf. Proclus on Plato and Philolaus.)

Contemplation of the order of the world a priori.

It seems clear that the path from the mathematical sciences to God, seen as the good, must proceed through the notion of the order of the world (but not as something verified by empirical observation), that is, of the *beauty of the world.* And the few indications we can glean elsewhere are indeed related to this notion.

These indications are:

(1) A text of Anaximander.

Things are created out of indeterminate matter, and destruction is a return to this indeterminate matter, according to necessity; for things are exposed to a mutual punishment and expiation towards one another, because of their injustices, according to the order of time.'[3]

An unfathomable text.

(2) A mysterious passage of Plato's *Gorgias*:[4]

'*. . . not to allow one's desires to become insolent and attempt to satisfy them; it is an endless evil and one leads the life of a robber.*

[1] *Republic*, 533b–d.
[2] *Ibid.*, 532a–b.
[3] Diels, op. cit., 5th ed., I, p. 89.
[4] *Gorgias*, 507e–508a.

In this way one cannot be friends with any other man or with God; for it makes one incapable of association or communion (κοινωνία) *and where there is no communion there is no friendship. And the wise tell us, Callicles, that heaven and earth, and gods and men, are kept together by communion and friendship and order* (κοσμιότητα) *and temperance and justice; and that, my friend, is why they call this totality an "order" and not a dis-order or an intemperance.* [There is in Plato the idea of *association* and *friendship* between God and man.] *But it seems to me that you have not paid attention to all this, clever though you are. You do not see that geometrical equality has great power with gods and men. According to you one ought to cultivate acquisitiveness; for you overlook geometry.*' (Cf. 'Justice is a number equally equal.'[1])

(3) An even more mysterious passage of the *Philebus*:

'*There could not be a more beautiful way than this. I have always loved it but it often escapes me and leaves me forlorn and not knowing what to do. It is not difficult to explain but it is very difficult to practise. All the inventions connected with an art or a technique have always been made by means of it.*

'*It is a gift from the gods to men, so it seems to me, thrown down from among them by some Prometheus at the same time as some extremely bright fire; and the ancients, being better than us and living closer to the gods, have handed on this oracle: that the things which are said to be everlasting are made out of the one and the many, and have the limited and the unlimited inherent in them.*'

(Power and love.)

[N.B. This does not refer to the world, but to an external order from which the world derives.]

'*Since these things are so ordered, we must always assume in every inquiry that there is one idea, which we shall find implicit in it; and after this unity, if we grasp it, we must look for two* [branches] *if they are there* [in the matter under investigation], *or else three or any other number; and then* [split up] *in the same way the unity of each of these* [branches]; *until we can not only see that the original unit is one and many and unlimited, but also that it is a definite number. And the idea of the unlimited must not be applied to quantity until we have seen clearly in the particular case what number is the intermediary between the one and the unlimited. Only then may we allow the unity*

[1] Pythagorean formula (Diels, op. cit., 5th ed., I, p. 452).

in each case to merge into the unlimited. The gods bestowed on us this method of investigating, learning, and teaching one another. . . .'[1]

(But we no longer know how to apply it.)

Examples. Grammar. Voice, multitude of sounds produced by the voice. To know how many letters and which.

Music.

Similarly, the opposite way; to go from the indefinite to the one. Teuth, the inventor of letters, first established the vowels, then the consonants, and then the mute; he counted them all, and combined them under the general name of letters.

Further on (26b):

'*It is from these two kinds of things—namely, a mixture of unlimited things and those which contain a limit—that the seasons and everything beautiful were created for us.*'

Observe that the idea of *beauty* appears here (see passage in the *Symposium*).

We should note:

(1) That this theory is specifically Pythagorean (cf. Philolaus and Pherecydes), but it is impossible that the Pythagoreans, whose origin was barely a hundred years earlier, could be those 'ancients' of whom Plato speaks. It must therefore be some older tradition—Orphism or the Eleusinian mysteries.

This tradition comprised simultaneously a theory of primitive inventions (writing, music, certain techniques), a theory of invention in general, and a theory of the order of the world. It was all based upon the same principle—namely, the mixture of the unlimited and the limited. This principle is also (in the same dialogue) a principle of morals [and, in the *Politics*, a principle of politics].

In connexion with this tradition, Plato alludes to Prometheus. And Aeschylus presents Prometheus as the author of primitive inventions and of the understanding of the seasons, of the revolutions of the stars, and of number.

Without forcing comparisons, one may note:

that this notion of the order of the world is very close to the sapiential books (but much more precise);

[1] *Philebus*, 16b–e.

that the words ἀριθμός number, and λόγος relation, are used interchangeably in the Pythagorean tradition. Λόγος means word, but also, and much more, it means relation.[1] In Plato the One is God, and the indefinite is matter. In view of which the words: '*number constitutes the mediation between the one and the indefinite*'[2] evoke strange echoes.

In the same way: the seasons and everything beautiful were made from the mixture of the unlimited and the limited—that is to say, by the ordering principle. (Everything beautiful, i.e. all things in so far as they are beautiful; because the universe is beautiful—cf. the *Timaeus*.)

With the Greeks, λόγος is essentially the mixture of limit and the unlimited. *Eudoxus*.

Finally, it must be remembered that Prometheus, who is here in question, is a god who took the lightning of Zeus in order to give fire to men, for love of them, and was crucified for it. (This passage shows that Prometheus' fire was not material fire.)

Note what the lightning is in the *Hymn of Cleanthes*. St. Luke 12. 49: I am come to throw (βαλεῖν) a fire upon the earth, and what will I further if it be already kindled? Acts of the apostles: tongues of fire. St. Matthew, words of St. John the Baptist: He will baptize you with the Holy Spirit and fire. Cf. also the analogy between two-edged[3] and: I am not come to bring peace, but the sword.

The dialogue in which the notion of the order of the world appears most strikingly, and is personified as a divinity who is called the soul of the world, is the *Timaeus*.

But before passing on to the *Timaeus* we must look at the conception of beauty and love, which is the other way of salvation indicated by Plato—the non-intellectual way, the way of love. (*Phaedrus*, *Symposium*.) This is the love which saves; and in the *Republic* Plato describes its opposite, the love which destroys —the infernal love, which he calls tyrannical.

The *Phaedrus* indicates a way of salvation which is not in the slightest degree intellectual; it involves nothing resembling study or science or philosophy, but is salvation through feeling

[1] Simone Weil's word is '*rapport*', which also means 'ratio' and 'proportion'.
[2] *Philebus*, 16d–e.
[3] *Hymn of Cleanthes*.

alone—a feeling which, at the beginning, is purely human; the love which consists in falling in love. This is the doctrine of Platonic love which was destined for such prodigious fame and which took root in so many countries. Europe. The Arabs.

The entire soul is immortal [proof: it is the principle of motion].'[1]

'*As for its structure, this must be said: that to describe it completely would be a god-like and lengthy task; but to express it as follows would be human and less onerous.*'[2]

[There follows a comparison which dates from remote antiquity. It is found in Hindu texts which are probably more or less contemporaneous with Plato. The image must therefore date back to the time when the populations of the two countries were still one people.]

'*Its character is comparable to a chariot with two winged horses and their driver. Among the gods, both horses and driver are good and of good breeding; but the character and breed of all others is mixed. To begin with, in the case of us men the driver has two horses to manage and one of these horses is handsome and good and well bred but the other is the opposite. Thus, inevitably, our team is difficult to drive. Among living things the difference between immortal and mortal is this: All that is soul presides over all that is without soul and it patrols the heavens, appearing now in one form and now in another. The perfect winged soul goes in the upper air and orders the whole world. But the one that loses its wings is swept downwards until it finds some solid habitation; it takes an earthly body.*'[3]

'*The essential property of wings is to lift up what is heavy.*'[4]

It would be impossible to state more clearly that the wing is a *supernatural organ*, that it is *grace*.

'*It rises in the air, up to the place where dwells the race of the gods; and of all bodily things it is the one which has most affinity with the divine. The divine is beautiful, wise, good, and so forth; and these are the virtues which particularly nourish and foster the winged part of the soul. Ugliness, evil, and the opposite qualities waste and destroy it. Zeus the great sovereign of heaven comes first, driving his winged chariot, ordering and surveying all things; and after him comes the*

[1] *Phaedrus*, 245c.
[2] *Ibid.* 246a.
[3] *Ibid.* 246a–c.
[4] *Ibid.* 246d.

host of gods and lesser gods, ranged in eleven ranks. Only Vesta remains behind in the mansion of the gods. . . . Many are the delightful prospects and ways within the bounds of heaven where the blessed gods go to and fro, each upon his business; and whoever wishes, and is able to, may follow them, for there is no envy in the celestial choir. When they go to feast and banquet they rise up to the very summit of the heavenly vault. The chariots of the gods, being well balanced and reined, rise easily; but the others with difficulty. For the vicious horse is heavy and his weight pulls downwards if the driver has not trained him well. And this inflicts extreme pain and extreme violence (ἀγών) *upon the soul; because the souls of those described as immortal, when they reach the summit, go and stand on the outer surface of heaven, being carried round by its rotation, while they gaze upon what is beyond the sky.*

'*Of the world beyond the sky no poet has ever worthily sung, nor ever will. It is like this—for I must dare to speak the truth, especially since truth is my theme: the reality which really exists is colourless, formless, and intangible; it can only be contemplated by the spirit* (νοῦς) *the soul's ruler. This it is which is the object of true knowledge, which likewise has its abode there.*'[1]

N.B. Here again we have Zeus, Being, and Knowledge. Zeus devours being and this act of devouring constitutes knowledge. Zeus devours being; this means that God is nourished by God. Nourishment means both love and joy together.

'*Just as God's thought is nourished by pure spirit and knowledge* (νοῦς καὶ ἐπιστήμη) *so also is the thought of every soul which is on the point of receiving its rightful inheritance; when, across time, it perceives reality, it loves* (ἀγαπᾷ) *and contemplates and feeds on truth and is happy, until the movement of rotation brings it back to the same point.* [24 hours.] *And during the circuit it sees real justice itself, and reason, and science; not what we call science, not the science which evolves and changes with circumstances, but science as it really is in its essential reality* (ἀλλ' ἐν τῷ ὅ ἐστιν ὂν ὄντως). *And in the same way it contemplates and feeds on the other real realities; then, sinking down again into the interior of heaven, it returns home.*'[2]

(God feeds on God. The soul *feeds* on God.)

N.B. It is obvious here what Plato means by the Ideas. They are purely and simply the *attributes of God*.

'*Such is the life of the gods. And among the other souls, the best of them will follow God and resemble him and will lift the charioteer's*

[1] *Ibid.* 246d–247d.
[2] *Ibid.* 247d–e.

head up into the world beyond the sky, and the soul will be carried round with the rotating sphere. But is has great difficulty with the horses and is hardly able to contemplate the realm of being. It plunges up and down through the violence of the horses and is able to see some things but not others.

'*All the other souls aspire to follow upwards, but they are unable; they sink down and lose control, trampling on one another in their struggles to get ahead. So there is much tumult, turmoil, and sweat; and hence, through the awkwardness* (κακίᾳ) *of the drivers, many horses are lamed and many wings broken. All of them suffer great pain and labour and go away without having attained* (succeeded, ἀτελεῖς not initiated, without having been initiated into) *the contemplation of reality; so they are reduced to living upon the food of mere opinion. This is why there is so much zeal to contemplate the meadows where truth dwells: the best food for the noblest part of the soul comes from those meadows; it is there that the food grows for the essence* (φύσις) *of the wing which makes the soul light. And there is an unalterable law* (νομὸς Ἀδραστείας *i.e. of Nemesis*) *that the soul which follows God and perceives something of the truth* (τι τῶν ἀληθῶν) *is safe from harm until the next revolution. And if it can do this always it is always safe. But when it is unable to follow and therefore sees nothing, when through some chance* (τινι συντυχίᾳ χρησαμένη) *it becomes filled with oblivion and evil and made heavy, it loses its wings under the burden and falls down to earth.*'[1]

[It then undergoes human birth and assumes such or such a character—philosopher, king, merchant, artisan, tyrant, etc.; a caste theory with additional castes—'*according to whether it had perceived more or less truth there above, before its fall*'.] [*There are no slaves* in this list.]

'*The soul which has never seen the truth at all never enters into this* [human] *form; for it is necessary for a man to be able to apprehend by reasoning in conformity with an idea which has arisen, through reasoning, out of a multiplicity of sensations.*

(Δεῖ γὰρ ἄνθρωπον ξυνιέναι κατ'εἶδος λεγόμενον, ἐκ πολλῶν ἰὸν ἀισθήσεων εἰς ἓν λογισμῷ ξυναιρούμενον.)

'*And this is nothing else than the memory of those things which the soul saw while it was following God, when it saw* (ὑπεριδοῦσα, transcendent vision—saw supernaturally—saw beyond and

[1] *Phaedrus*, 248a–c.

above itself) *what we call reality and emerged* (ἀνακύψασα) *into the region of the really existing real.*'[1]

[Thus every human being without exception, including the most degraded of slaves, has a soul which comes from the world above the sky, that is to say from God, and which is called to return there. The sign of this origin and this vocation is the capacity to form general ideas, a capacity which exists in varying degrees in all human beings; without it no child could learn to speak. The only differences between human beings are accidental and variable. In essence they are identical, and consequently equal. The Pythagoreans defined justice by equality. This idea of the essential equality of men as children of God goes back at least to the year 2000 B.C.; it is found in Egyptian documents of that date.

This theory of reminiscence is Orphic, as is proved by 'the cold water which springs from the lake of Memory'.[2]

What is meant by these words 'reminiscence' and 'memory'? It becomes clear as soon as we look closely at the image itself, as should always be done with similes. Suppose I have had a thought and have forgotten it two hours later. . . . I direct my attention for a few minutes towards an empty space; empty but real. Then suddenly the thought is there, beyond all possible doubt. I did not know what it was, and yet now I recognize it as being what I was waiting for. An everyday experience, and an unfathomable mystery.

Our thoughts are by nature limited to the realities of this world. The past is a reality which is on our level, but it is absolutely beyond our reach. We cannot take a single step towards it but can only orient our minds so as to receive an emanation from it.

It is for this reason that the past is the best image of the eternal, supernatural realities. (The joy and the beauty of remembering is perhaps connected with this.) Proust had a glimpse of it.

This comparison may help us to grasp the relation between particular objects of sense and the eternal. As regards the past, there are present objects—a letter, a ring, etc.—which we call souvenirs because they make for the soul a contact, a real contact, with the past. The sacraments . . .].

[1] *Ibid.* 249b–c.

[2] See page 90 above.

[We are next shown how the *madness of love* (Plato's expression) can be useful for salvation. It is a love which first emerges as physical love; but the essential point is the grace which flows from the effect of beauty, and it is applicable to all beauty that is apprehended by the senses.]

'*As we have said, the soul of every man has, by the fact of its essence* (φύσει), *contemplated reality, for otherwise it would not have passed into a human form. But it is not easy for every soul to remember the things it saw when it was up there, either because it only saw them for a short time or else because it has suffered some misfortune since it fell down to this world; for example the misfortune of being turned towards injustice through evil associations, which has made it oblivious of the sacred things it once saw.*'[1]

Oblivion; another image of unfathomable profundity. What we have forgotten of the past—for example, an emotion—has absolutely no existence. And yet everything of our past that we have forgotten retains none the less its full reality—the reality proper to it, which is past reality but is not existence, because the past does not exist today.

There are only a few souls which retain enough memory. But these, when they see some image of the things above, are as if thunderstruck (ἐκπλήττονται) *and their self-control is shaken. But they are unaware of what is happening to them, because they cannot see clearly enough. And as for justice, wisdom, and other values* (τίμια ψυχαῖς), *no splendour shines from their images here below. Only a few men approach those images, by means of dull instruments and laboriously, and contemplate the essence* (γένος) *of what they represent. But beauty shone brilliantly when with the blessed choir we contemplated the joyful spectacle and were initiated into those mysteries which may fairly be called the most blessed of all mysteries, those which we celebrated when we were whole and had not yet suffered any evil; and in the future we shall return there, we shall be admitted to those perfect, simple, unmoving, and blessed visions* (from φαίνω)*; we shall contemplate, we shall officiate* (ἐποπτεύοντες) *in a pure splendour, being ourselves pure and no longer disfigured by the thing we carry around with us and call a body, that thing we are attached to as an oyster to its shell.*

'*Let memory reveal these joys! But to return now to beauty, inspired*

[1] *Phaedrus*, 249c–250a.

thanks to memory by regret for things past: Beauty, as we said, was shining among the other realities; and when we come down to this world we perceive her through the senses. Wisdom is not visible; for if a clear vision of wisdom could appear to our eyes she would inspire terrible passions (strange loves?). *But in fact it is only beauty which has* this destination (mission) *of being at the same time what is most manifest and most desirable* (ἐρασμιώτατον). *The man whose initiation is not recent, or who has been corrupted, is not immediately transported from this world into the other, towards beauty in itself, when he sees something that is called beautiful here below. Instead of reverencing it when he sees it, he abandons himself to lust like an animal, and tries to approach it. But he who has been recently initiated and who has devoted much contemplation to the things above, when he sees a face like the gods', which is a good copy of real beauty, or some other bodily form, he first trembles and something of the terrors of the other world revives in him* [terrors of falling] (δειμάτων), *and then, gazing upon it, he reveres it like a god. . . . And while he looks, as in a shivering fever, there comes a sudden change, with sweating and unusual heat. He is receiving the emanation of beauty through his eyes; and this emanation warms him and bathes the essence* (φύσιν) *of his wings. The warmth dissolves the hardness around the roots of the feathers, whose growth has long been impeded by stiffness* (sclerosis, σκληρότητος.) *This nourishing flow causes the shafts of the feathers to swell and to thrust up from their roots all over the soul* (ὑπὸ πᾶν τὸ τῆς ψυχῆς εἶδος). *For formerly the entire soul was winged* (cf. the *winged love* of the Orphics).

'*All this time the whole soul is seething* [ἀνακηκίει, to gush, to ooze—πέτρης, from a rock—κηκίω, to trickle, flow, exhale, spread—ἀνά, upwards] *and overflowing. And it suffers in the same way as children when cutting their teeth. As the teeth push their way through, they feel an irritation and soreness of the gums. And this is what the soul suffers whose wings are beginning to sprout. It boils and feels sore and tingling as its wings grow.*'[1]

[The thing which makes the chains fall off and the prisoner begin to walk is not named in the *Republic*; it is the shock received from beauty.]

The above passage is not simply an image, it is a real attempt at a psycho-physiological theory of the phenomena accompanying

[1] *Ibid.*, 250a–251c.

grace. There is no reason for not attempting such a theory. Grace comes from above, but it falls upon a being who possesses a psychological and physical nature, and there is no reason against giving an account of the effects produced upon this nature by the contact of grace.

Plato's idea is that beauty acts in a two-fold manner, first through the shock produced by the memory of the other world and then as the material source of an energy which can be directly used for spiritual progress. The images of warmth and nourishment indicate energy. Various objects can be sources of energy, but of energy on different levels. For example, in war a decoration is really a source of energy (in the literal, physical sense of the word) on the level of military courage; it stimulates movements for which otherwise one would lack the strength. Similarly money, for *work*. In a general way, whatever there is a desire for is a source of energy, and the energy is on the same level as the desire. Beauty as such is a source of energy on the level of the spiritual life, and the reason is that the contemplation of beauty implies detachment. A thing that we perceive as beautiful is a thing which we do not touch, which we do not want to touch, for fear of damaging it. The energy supplied by other objects of desire can only be transmuted into spiritually usable energy through an act of detachment or refusal—declining the decoration or giving away the money. But the attraction of beauty already in itself implies a refusal. One is both attracted and kept at a distance. Thus the beautiful is a mechanism for transmuting base energy into high-grade energy.

This analysis can be transposed so as to apply to every kind of spiritual progress. Wherever there is love there is sensible, perceptible beauty. The celebration of the Eucharist affects the soul by means of a beauty analogous to that of works of art. Virtue or sanctity in a human being appear externally as perceptible beauty in the expression of his face, or in gestures, attitudes, or voice, or some other aspect of his behaviour. There is perceptible beauty in the sciences. And so on.

In all real love, that part of the soul which is most closely attached to the body has its part, and the good can only come to it in the form of the beautiful.

Soreness and irritation of the gums—an admirable image. Here again, suffering plays an irreducible part. The simile is

admirable because that sprouting of growth and the pain which accompanies it take place without one's knowing how and without one's direct participation. The will can only exert itself in one way: it can contemplate the beautiful being and refrain from clutching at it. The rest happens of its own accord, without the will's co-operation. From that point of view, this image is better than the one in the myth of the cave.

This irritation in the wings, at the absence of the loved being, is a violent pain:

'*The outlets through which the feathers sprout become dried up and close, preventing the growth of the wing. The sprouting germs, being filled with desire and shut in, throb like a pulse in an inflamed sore and prick like a goad at the blocked outlets. So the whole soul is stung* (κεντουμένη) *as if by a gad-fly and feels tortured. And at the same time it remembers the beautiful and feels joy.*'[1]

[When it sees the beautiful, the parched place where the wings are growing is watered,] '*it has a respite amid the goading and torments and enjoys a spell of the sweetest delight*'.[2]

That too can be transposed. Cf. St. John of the Cross on the alternating periods of dark night and sensible grace.

The soul recovers a memory of the god whom it followed in heaven and whose image it sees in the loved being. This memory is at first very imperfect.

'*He seeks and tries to discover within himself the image of his god; and he succeeds because he is constrained to look continually towards his god. He enters into contact with him through memory. The god enters into him and he becomes possessed of the god's habits* (ἔθη) *and teachings, so far as it is possible for men to partake in divinity.*'[3]

The one who loves tries to make his beloved resemble as much as possible the god of whom he has recovered the memory, and when the beloved returns his love there is established between them a friendship based upon a common participation in divine things.

But the irritation in the wings is not the only suffering that has to be borne during this process. There is another more violent one.

[1] *Phaedrus*, 251d. [2] *Ibid.*, 251e. [3] *Ibid.*, 252c–253a.

[It is the fault of the bad horse, which wants to hurl itself at the beautiful object. Being indocile and unresponsive to bridle and whip, he violently drags the lover towards the beloved. But once in the beloved's presence 'the memory of the essence of beauty comes back to him'.]

'*Looking upon beauty the soul is stricken with fear and awe* (σέβομαι) *and falls backward; it pulls the reins with such violence as to bring both steeds upon their haunches, the one without resistance but the other struggling rebelliously. Then they withdrew to a distance. . . .*'[1]

[But once again the bad horse drags the chariot towards the beloved.]

'*Then the driver again experiences the same sensations, but still more strongly. He jerks back as if before a barrier and pulls the bit violently from the teeth of the unruly horse, drenching its perverse tongue and its jaws with blood, making it fall and bruise its legs and flanks, and inflicting torments on it. When the vicious horse has endured this treatment many times it becomes subdued and obeys the driver's will; and then when it sees the beautiful object it is stunned with terror.*'[2]

Here, as in the image of the cave, the sum of pain is irreducible. And, as in the cave, there are two distinct kinds of pain, one of them voluntary, when the stiff body is compelled to move or when the bad horse is reined in; the other completely involuntary and linked with grace itself which, although it is the only source of pure joy, causes pain so long as the soul has not yet reached the state of perfection—such is the pain of eyes dazzled by the light or the pain of soreness in the wings.

The field of the voluntary suffering is purely negative, it is simply a necessary pre-condition. To define its nature Plato makes use of an admirable image, that of training. This image is implied in the metaphor of the chariot, a metaphor of fathomless antiquity, for it is also found in ancient Sanskrit texts.

Training is based upon what are called today conditioned reflexes. By associating pleasure or pain with this or that object, new reflexes are formed which end by becoming automatic. In this way we can compel the animal in us to keep quiet and not interrupt when our attention is turned towards the source of grace. Circus dogs are trained with the whip and with sugar, but

[1] *Phaedrus*, 254b–c. [2] *Ibid.*, 254d–e.

much more quickly and easily with the whip, and in any case sugar is not always available. So pain is the principal method. But it is of no use in itself. One could beat a dog all day long without its learning anything. Pains inflicted on ourselves are useless and even harmful unless they are part of a method designed for the purpose in view—which is that the flesh should not interfere with the action of grace. The method alone is what matters. We ought not to give the animal in us a single stroke of the whip beyond the minimum required for the purpose in view. Nor a single stroke less.

It should be noted that the bad horse is as much of a help as a hindrance. It is he who irresistibly drags the chariot towards the good. By the time he is completely tamed, the irritation in the wings is a sufficient incentive for the driver. But at the beginning the bad horse is indispensable.

Even his faults are useful, because each fault gives an opportunity for progress in his training. The mere accumulation of punishments brings him in the end to complete docility. It must be emphasized that training is a finite operation. The horse's temperament may be very difficult and it may be a long time before there is any perceptible progress, but it is absolutely certain that if he is punished time after time he will end by becoming perfectly docile.

This is the source of security and the foundation of the virtue of hope. The evil within us is finite like ourselves; the good with whose help we fight against it is outside us and is infinite. Therefore it is absolutely certain that the evil will be exhausted.

Note that although this training is a voluntary process, and therefore a natural one, it is only performed because the soul has been touched by the memory of the things above and its wings are beginning to sprout. *And it is a negative operation.*

As for the agent of salvation, which is grace accompanied by joy and pain, it is something that we receive without doing anything positive; except that we have to keep ourselves exposed towards grace; that is to say, to keep our attention oriented with love towards the good. The rest, whether painful or sweet, takes place in us without our co-operation. It is the fact of this second element which proves that it is truly a mysticism.

Once the bad horse has been tamed the lover, and also, by

contagion, the beloved remember more and more about the things above. And here philosophy enters in again, but Plato does not say what kind of study he has in mind.

He says a little more about it in the *Symposium*, where a way is indicated which begins from love and reaches the highest knowledge. Repeating what he has learned from a woman of exalted wisdom, named Diotima, Socrates advises that when one is captivated by love for the beauty of some form or physical appearance one should understand first of all that beauty is not something peculiar to it, but is also found in other physical appearances. It is therefore something in which these physical appearances participate but which does not itself appear; it is something invisible. Thence one should rise to the consideration of beauty in actions (the virtues) and then of beauty in sciences and philosophical doctrines,

'*oriented towards the immense sea of beauty*'.[1]

Here is the culminating point of the progression:

'*The man who has considered beautiful things duly and in their right order, having reached the final stage of love, suddenly beholds a beauty of supernatural* (θαυμαστὸν) *essence, which is the thing for whose sake all these labours have been endured. It is eternally real, unproduced, indestructible, subject neither to increase nor decay. It is not partly beautiful and partly ugly; nor beautiful at one time and not another; nor beautiful from one point of view and ugly from another; nor beautiful in one place and not in another; nor beautiful for some people and ugly for others. And beauty does not dwell in it like a phantom, as is the case with faces and hands and every part of the body and every particular discourse and every particular science. Nor does it subsist in anything else, whether living being or sky or earth or anything at all. It exists in itself, by itself, with itself, unique in essence and eternally real. All other beautiful things participate in it, but in such a way that their births and deaths neither increase nor diminish it, nor modify it in any way. When anyone attains to direct contemplation of this beauty, he has almost reached the goal. . . . When anyone* [has followed the prescribed order of studies] *so that after the* [beautiful] *sciences he comes to that science which is nothing other than the science of the beautiful itself, then at last he reaches the knowledge of what beauty is. . . . Think what it must be to see the beautiful itself,*

[1] *Symposium*, 210d.

simple, pure, and not intermixed (defiled) *with flesh and colours and all the nonsense of mortality, but the divine beauty itself, of unique essence, if one could see it. . . .* [He who is able] *. . . having reached truth, and bringing forth and fostering in himself true virtue, will become God's friend and be immortal in so far as this is conceded to man. . . .*'[1]

'*It would be hard for human nature to find a better ally in this enterprise than Love* (ἔρως). *And therefore I say that every man ought to honour Love.*'[2]

This absolute, divine beauty by whose contemplation one becomes God's friend is the beauty of God; it is the attribute of God under which we see him. But it is still not the end; it corresponds therefore to being (the Word) in the *Republic*.

There is no question of a general idea of beauty; it is something quite different, it is a thing which is an object of love and desire, a thing which is eternally real. One reaches it through gradually learning that beauty does not consist in the lure of the flesh, but in harmony, and through lovingly seeking this harmony in all things.

From this passage of the *Symposium* we get an idea of what comes after geometry and astronomy in the path of wisdom which the *Republic* indicates. It is the contemplation of the beauty of those sciences; and from this beauty one passes to the good.

The path shown in the *Symposium* is the quest of *perfection*.

Plato has set Prometheus to preside over the path indicated in the *Republic*. He mentions no particular divinity as presiding over the path of the *Phaedrus*; but he makes use continually and with marked insistence of terms specifically pertaining to the terminology of the mysteries (in the *Phaedrus* as well as in the *Symposium*). Both this fact and also the term μανία, employed in the *Phaedrus*, evoke Dionysus, the god of the mystic madness and of the Mysteries—and Dionysus is the same as Osiris, the suffering, dead, and resurrected god and saviour of souls. Prometheus and Dionysus are the two guides of the soul which is journeying towards God.

In the *Symposium* Love is the guide; and it is in connexion with him that Plato develops the theory of mediation:

[1] *Ibid.*, 210e–212a. [2] *Ibid.*, 212b.

'*Everything that is demi-god* (bad translation) *is an intermediary* (μεταξύ, *proportional mean*) *between the mortal and the immortal—And what is its virtue* (δύναμιν)*?—To interpret* (ἑρμηνεῦον; *Hermes too is a mediator!*) *and mediate between divine and human things, conveying the prayers and sacrifices of men to the gods and communicating to men the commands and directions of the gods concerning the sacrifices. He occupies the intermediate space between the human and the divine, so that everything is connected to him. That is why the art of divination and of the priesthood, and sacrifices, mysteries, and incantations all subsist through him. God does not communicate directly with men, but all intercourse and converse between the divine and the human is effected through this intermediary.*'[1]

Story of the birth of Love. The son of Plenty, i.e. the divine plenitude, and of Poverty, i.e. human misery. Poros (way, path, expedient, resource) the Plenteous (?), was asleep and drunk with nectar. Poverty lay with him while he slept. . . . (Certainly a very old tradition, for the name Poros is obscure and inexplicable. But in any case it is God.)

'(Love) *is always poor, withered and thin, ragged, barefoot, homeless, sleeping on the ground without shelter, in doorways and by the roadside, because through his mother's nature he always has want* (ἔνδεια) *for companion.*'[2]

Cf. Dante's lines on poverty. St. Francis' marriage with Poverty, the widow of Christ.

> *While still a youth he warred against his father*
> *for the sake of that lady to whom, as to death,*
> *no one willingly opens his door.*
> *And before his spiritual court*
> *and in presence of the Father was united to her,*
> *and then loved her more every day.*
> *She, having lost her first husband,*
> *had been despised and obscure for eleven hundred years,*
> *and had had no suitors before him.*
> *It made no difference that she was known*
> *to be unshaken even in the presence of Pluto,*[3]
> *at the voice of doom which the whole world dreads.*

[1] *Symposium*, 202e–203a. [2] *Ibid.*, 203c–d.
[3] *Sic.* Simone Weil has slightly paraphrased this line, omitting '*con Amiclate*'.

> *It made no difference that she was so faithful*
> *and proud that, where Mary stayed below,*
> *she went up on the Cross with Christ.*[1]

'*Through his father he is enterprising and full of designs upon the beautiful and the good, being bold, active, quick, a formidable hunter. . . . His nature is neither mortal nor immortal. . . . He dies away and revives, according to his father's nature. . . . He loves wisdom, for he is born of a wise and well-equipped father, and a mother both ignorant and poor. . . .*'[2]

The idea of mediation is essential in Plato because, as he says in the *Philebus*, *it is important not to proceed too quickly to the one.*

'*Poros*—the Way, Superabundance—*the son of Wisdom. . . . After the banquet, as is customary on feast-days, Poverty came to beg and stood by the door. Poros, being drunk with nectar, came out into the garden of Zeus and fell into a heavy sleep. Poverty, on account of her destitution, thought of having a child by Poros. She lay beside him and conceived Love.*'[3]

The Creation. Timaeus

Here there is a second proof of God. The first corresponded to what Descartes calls the proof by the idea of perfection. The second is the proof by the order of the world. Not, however, on the usual abject and ludicrous ground of the adaptation of means to ends, but on the only legitimate ground for a proof by the order of the world; that is to say, by the world's beauty. A Greek statue inspires by its beauty a love which cannot have a piece of stone for its object; in the same way the world inspires a love which cannot have matter for its object. It comes to the same thing: the proof of God by love. There can be no other proof, for God is nothing else but the good and the only faculty for making contact with him is love. Just as we cannot recognize sound with our eyes, so there is no faculty except love for recognizing God.

There are two reflections of the pure good. One of them, which is the idea of the good, is in our souls; the other, which is in the world, is beauty.

[1] *Paradise*, Canto XI, lines 58–72. [2] *Symposium*, 203d–204b.
[3] *Ibid*, 203b–c.

It is the order of the world *itself*, and not any definable order, which is beautiful. A poem is mediocre if a certain word has been introduced and placed for effect . . . (or else the critic is mediocre who thus explains it . . .).

The *Timaeus* is an account of the creation. Its source appears to be so different that it is unlike any of Plato's other dialogues. Either he was inspired from a source unknown to us or else between the other dialogues and this one something had happened to him. It is easy to guess what. He had come out of the cave and seen the sun and returned to the cave. The *Timaeus* is the book of the man who comes back into the cave from above. So this world of the senses no longer appears in it as a cave.

In the *Timaeus* there is a trinity: the Artificer, the Model of the creation, and the Soul of the world.

'*First of all we must, in my judgement, make this distinction. What is that which is eternally real but never coming into existence, and what is that which is always coming into existence but is never real? The one is apprehended by thought with the help of reason* (λόγος) *since it is eternally self-consistent reality, whereas the other is a subject of opinion based on unreasoning sensation, since it becomes and perishes without ever possessing real existence. Again, everything which becomes* (γιγνόμενον) *must necessarily have some author* (ἀιτίου τινὸς) *since it is quite impossible for there to be a becoming without a cause. Thus when the artificer of any object reproduces its essence* (ἰδέαν) *and virtue* (δύναμιν) *by keeping his gaze fixed upon what is self-consistent and using it as a model, the object thus executed is necessarily altogether beautiful. But if he looks towards the world of becoming and uses a created model, the result is not beautiful.*'[1]

A very obscure passage unless one possesses the key, but luminous if one has it. The key is that Plato is expounding a theory of artistic creation and, by analogy, of the divine creation. A well-chosen analogy if the proof of the world's divine origin is its beauty. Why is this more legitimate than the analogy of the clock's mechanism? Because a work of art, like knowledge and like love, contains *inspiration*.

In these lines the distinction is implied between *art of the very highest order*, which is necessarily related to sanctity, and

[1] *Timaeus*, 27d–28b.

art of the second, third, and *n*th order. Many who are regarded as very great artists belong to the second order.

To interpret these lines aright one must understand that Plato had in mind, as analogy for the divine creation, the image of artistic creation—composing a poem, sculpting a statue, etc. Contained in these lines is the complete theory of artistic composition, an experimental theory. If an artist tries to imitate either some sense object or some psychological phenomenon, such as a feeling, etc., his work is mediocre. In creating a work of art of the highest class the artist's attention is oriented towards silence and the void; from this silence and void there descends an inspiration which develops into words or forms. Here the Model is the source of transcendent inspiration—and therefore the Artificer fitly corresponds to the Father, the Soul of the World to the Son, and the Model to the Spirit. A model which is ultra-transcendent and unrepresentable, like the Spirit.

(There is no particular intention in art. The poet who puts in a certain particular word for a certain particular effect is a mediocre poet.)

This Model is a living Being, it is not a thing.

'*Now as regards the whole heaven or cosmos or whatever name we give it, the first question to be asked, as it should be asked about any subject whatever, is whether it is an eternal reality, not arising from any principle of generation, or whether it has come into existence having originated from some principle. It has come into existence, for it is visible and tangible and it is possessed of a body; and all such things are sensible, and things sensible, being apprehensible by opinion with the aid of sensation, have come into existence and are manifestly subject to generation and becoming. We have asserted that whatever becomes must necessarily be produced by some author. To discover the creator* (ποιητής) *and father of this whole universe is a great task; and, having found him, one cannot speak of him to all men.*

'*But on this subject it is further necessary to inquire after which of the two models the world-architect constructed the world; whether from the model which remains self-consistent and self-identical or from the model which changes* (γεγονός). *If the world is beautiful and its constructor is good, it is clear that he has looked to the eternal. In the opposite case, which it is impious to suggest, he has looked to the changing. But it is quite clear that he looked to the eternal; for his*

production is the most beautiful of all and he is the most perfect of authors.'[1]

'*Let us now explain why there was becoming and why the creator of everything created it. He was good, and in him who is good there is never any envy about anything. Being without envy, he wanted everything that came into existence to be as like himself as possible.*

'*. . . God wanted everything to be good and that nothing should lack the value proper to it* (φλαῦρον δὲ μηδὲν εἶναι κατὰ δύναμιν), *so when he took over all that was visible, finding it in a state of unrest and discordant and disorderly motion, he brought it out of disorder into order, deeming that order is absolutely* (πάντως) *better than disorder* [*i.e.* better *in itself* and not in this or that respect].

'*As to the most perfect being, it neither was nor is permissible for him to perform any but the most beautiful acts. He reflected and perceived that among creatures by nature visible a world without intelligence cannot possibly be more beautiful than one with intelligence; and that intelligence cannot exist anywhere apart from the soul. Reflecting thus, it was by uniting an intelligence with a soul and a soul with a body that he constructed the universe, so as to have achieved a work which would be by essence perfectly beautiful. Thus according to likelihood* [explain this word: reflections of silver in St. John of the Cross[2]] *we may say that this world was really born endowed with a soul and an intelligence through the providence of God.'*[3]

The model

'*In the likeness of which living being did its maker construct the world? Let us not deign to say it was in the likeness of a being which is a part of anything; for nothing which resembles a partial thing can be beautiful. We shall say that what the world most resembles is that living being of which all the others, considered separately or generally, are parts. That living being embraces and contains within itself all spiritual living beings, just as the world contains us and all visible animals. In the likeness of this, the most beautiful of spiritual beings, perfect in all respects absolutely, God wished to make one visible living creature, containing within it all living creatures akin to itself; and he made it.'*[4]

[1] *Timaeus*, 28b–29a.

[2] Simone Weil's word, which I have translated as 'likelihood' is '*vraisemblance*'. The reference to St. John of the Cross is obscure. Possibly it is to the Spiritual Canticle II, Stanza 12: '*semblantes plateados*', as Simone Pétrement has suggested.

[3] *Timaeus*, 29d–30c.

[4] *Ibid.*, 30c–31a.

[Uniqueness of the world] '*. . . In order that by its uniqueness it might resemble the universal living being the creator did not create two cosmoses nor an infinite number, but this one unique Heaven, the only son* (μονογενής) *which has been, is, and will continue to be.'*[1]

(Heaven, soul of the world.)

This heaven, i.e. the intelligence united to the soul of the world (he says this later), is the *only son*. We shall find that this expression recurs.

Visible and tangible body, hence fire and earth. Three dimensions, therefore the need for two porportional means: air and water.

'*In this manner and out of these materials, four in number, the world's body was produced, having been harmonized by means of proportion; and thus it possesses amity, being united within itself and indissoluble.'*[2]

'*Such was the whole plan of the eternally real God concerning the God who was one day to be.'*[3] (The Word as regulator of the world.)

The soul of the world.

In the centre he placed the soul, which he spread through the whole of it and outside also, enveloping the body [the soul is *outside* the body] *and he made it a revolving circle, a single solitary isolated heaven, able by its own virtue to be its own companion and needing no other, sufficiently known and loved of itself. Thus he engendered it, to be a blessed God.'*[4]

'*God constructed the soul to be older and prior to the body in birth and excellence, so that she should rule and the body obey.'*[5]

Composition of the soul of the world.

The soul is not the νοῦς. It is the engendered God who is related to the creation as *mediator*, at the intersection of the other world and this world.

'*From the two substances—the one which is indivisible and eternally the same and the one which is transient and divisible in bodies—he made the idea of a third substance as intermediary, the substance relating to the essence of the Same and of the Other. And he related it in the same way, as intermediary, to the indivisible on the one hand and the divisible on the other. And taking these three realities, he blended them into a*

[1] *Ibid.*, 31b.

[2] *Ibid.*, 32b–c.

[3] *Ibid.*, 34a.

[4] *Ibid.*, 34b.

[5] *Ibid.*, 34c.

single essence (ἰδέαν) *by forcing the nature* (φύσιν) *of the Other, which is rebellious to blending, into harmony with the nature of the Same.*'[1]

The substance, the essence, of the soul of the world is something which constitutes a proportional mean between God and the material universe. The proportional mean is precisely the idea of mediation.

This mediating function of the Soul of the World strangely recalls Prometheus, Dionysus, Love, and the perfectly just man of the *Republic*.

Orphic text on love (*Birds* of Aristophanes).

(In the Orphic texts love plays the part of the Soul of the World.)

At first there was Chaos and Night and black darkness and
far-spreading Tartarus.
There was no Earth, nor Air, nor Sky. In the boundless
bosom of the dark
The sable-winged Night conceived a wind-egg (Egg of the world, cf. *Phaedrus*)
And out of it in due season sprang Love, the desired,
Golden wings glittering on his back like whirlwinds.
He, by union with the winged and nocturnal Chaos throughout
(κατά) *wide Tartarus,*
Brought our race to birth and first led it up (ἀνήγαγεν) *to the light.*
There was no race of immortals until Love had combined all things.
When he had commingled things together, the Sky and the Ocean
were born
And the Earth and the imperishable race of the blessed gods.[2]

(Cf. φιλία in the *Gorgias*. *Love* as ordering principle.)

Proclus, commentary on Timaeus (32c): '*Pherecydes* (Syrian master of Pythagoras) *said that Zeus, when he was on the point of creating, changed himself into love; for out of the contraries he combined the order of the world into a harmony* (ὁμολογία) *and brought it to amity and planted everywhere in all things identity and amity.*'

Another resemblance between the Soul of the World and Prometheus, Dionysus, Love (poor and homeless), and the Just Man, is in their *suffering*. This is the suffering of the Soul of the World:

[1] *Timaeus*, 35a.

[2] Aristophanes, *Birds*, 693–702.

'*Next, along the whole length,* God cut into two halves *this combination which he had made; he placed the two halves one across the other in the form of the letter* chi, *and bent them so as to form two circles, joining the extremities at the point opposite the intersection of the* chi. *He gave them the movement which revolves continually on the same spot, a circular movement which encloses them. Of the two circles he placed one outside and the other inside, and he decided that the exterior circling should be that of the essence of the Same and the interior that of the essence of the Other . . . and he gave the primacy to the movement of the Same and the Uniform. . . . He extended all that is bodily within the interior of the soul. . . . And thus the sky acquired its visible body while the soul, invisible, partaking of reason and harmony, was born of the most perfect of the eternally real thoughts, being herself the most perfect of generated thoughts.*'[1]

'*This world, a visible living being, embracing all that is visible, the perceptible image of the spiritual God, was born infinitely great, good, beautiful, and perfect—this unique heaven which is the only son.*'[2]

[1] *Timaeus*, 36b–37a.

[2] *Ibid.*, 92c.

11 *Notes on Cleanthes, Pherecydes, Anaximander, and Philolaus*

These notes appear in *La Source grecque* (Gallimard, 1953). They were written in London in 1943 and are therefore among the last of Simone Weil's writings.

CLEANTHES' *Hymn to Zeus.* (Of Heraclitean inspiration, as is proved by the resemblance to a number of fragments of Heraclitus, in addition to what we know of Heraclitus' authority with the Stoics.)

σοὶ δὴ πᾶς ὅδε κόσμος ἑλισσόμενος περὶ γαῖαν
πείθεται, ᾗ κεν ἄγῃς, καὶ ἑκὼν ὑπὸ σεῖο κρατεῖται·
τοῖον ἔχεις ὑποεργὸν ἀνικήτοις ὑπὸ χερσὶν
ἀμφήκη, πυρόεντα, ἀειζώοντα κεραυνόν·
τοῦ γὰρ ὑπὸ πληγῆς φύσεως πάντ' ἐρρίγασιν·
ᾧ σὺ κατευθύνεις κοινὸν λόγον, ὃς διὰ πάντων
φοιταῖ, μειγνύμενος μεγάλῳ μικροῖς τε φάεσσι,
ὡς τόσσος γεγαὼς ὕπατος βασιλεὺς διὰ παντός.

To thee this whole universe, revolving around the earth,
is obedient wherever thou leadest, and accepts thy domination.
Such power, in thine invincible hands, has thy servant,
the double-edged, blazing, eternally living lightning.
For when it strikes, everything in nature trembles.
By it thou guidest the universal Mediation (λόγος) *which circulates*
among all things, mixed with the great light and the lesser ones,
supreme king everywhere, by dignity of birth.

Remarks:

(1) The special virtue of the lightning is that it induces consent to God's commands. Therefore the lightning is Love, in other words the Holy Spirit. It is the fire which Christ came to throw upon earth. This clarifies the meaning of Prometheus' theft of Zeus' lightning in order to give men fire, a gift which prevented Zeus from annihilating them, therefore a redemptive gift (cf. Aeschylus). The lightning is two-edged, which recalls the sword brought by Christ ('*think not that I am come*', etc.), and St. Paul's words: '*the Holy Spirit divides asunder*', and the two-edged axe of the Cretan Zeus.

(2) Not only men, but inert matter itself obeys God freely and through love. Plato speaks in the same way. It is a wonderfully poetic conception, which we have lost and which, if it were present in us, would abolish the unholy opposition between science and religion. (It is in no way opposed to science, on the contrary: it was what led the Greeks to invent science.)

(3) The lightning is a '*servant*' and is '*eternally living*'; these words describe a *person.*

(4) The Stoics used the word πνεῦμα for the fiery energy which they believed to underlie the whole of nature. Lightning is the celestial, transcendent form of this energy. In this way the texts of Heraclitus are affiliated with those of the New Testament.

(5) As antiquity conceived it, the *natural habitat* of fire is on high, as that of earth is down below. Fire tends to rise, just as solid bodies tend to fall. A descending fire is *against nature.* In this way the lightning is the image of the madness of love by which God is constrained to a descending movement towards men.

(6) The Logos is a king, another word which is descriptive of a person. This makes three of them. [Instead of Word, one should always translate Logos as Mediation.]

(7) His dignity of birth, this seems to imply that he is the son of Zeus.

His function is regulator of the world, as in Christian theology.

In short, this text includes everything except the Incarnation (which does not imply that it was absent from the poet's mind).

PHERECYDES (Syrian, master of Pythagoras)

Proclus: ὁ Φερεκύδης ἔλεγεν εἰς Ἔρωτα μεταβεβλῆσθαι τὸν Δία μέλλοντα δημιουργεῖν, ὅτι δὴ τὸν κόσμον ἐκ τῶν ἐναντίων συνιστὰς, εἰς ὁμολογίαν καὶ φιλίαν ἤγαγε καὶ ταυτότητα πᾶσιν ἐνέσπειρε καὶ ἕνωσιν τὴν δι' ὅλων διήκουσαν.

'*Zeus, when about to create, changed himself into Love; for in composing the order of the world out of the contraries he brought it to concord and*

friendship, and in all things he set the seed of identity and the unity which pervades everything.'[1]

N.B. Concerning this Pherecydes there is an extraordinary text of Clement of Alexandria, which is a strange confirmation of my hypothesis about the sons of Noah[2] and also throws a singular light—which could be used in propaganda—upon the origin of the Yggdrasil of the nordic mythologies:

'*Pherecydes the Syrian has said: "Zeus made a large and beautiful cloth and embroidered on it the Earth and the Ocean and the dwellings of the Ocean" . . . Isidorus* [a contemporary gnostic] *. . . taught what are the winged oak and the embroidered cloth that hangs on it, allegories which Pherecydes included in his theology and whose basis he borrowed from the prophecy of Ham.*'[3]

Suidas says that Pherecydes attained wisdom without having had a master but through knowledge of the secret Scriptures of the Phoenicians.

So the supposition seems clearly indicated that these Scriptures contained a prophecy of Ham.

Perhaps the peoples called in Genesis the children of Ham were not a race but were the peoples whose secret religion emanated from that prophecy.

And if the prophecy said that God, in order to create, changed himself into Love. . . .

Anaximander

[Note that he was a disciple of Thales, whose mother was Phoenician, of descent from Cadmus and Agenor—in other words, descended from those who, according to Herodotus, introduced into Greece the cult of Osiris, under the name of Dionysus.]

. . . ἐξ ὧν δὲ ἡ γένεσις ἐστι τοῖς οὖσιν, κὰι τὴν φθορὰν εἰς ταῦτα γίνεσθαι κατὰ τὸ χρεών· διδόναι γὰρ ἀυτὰ δίκην καὶ τίσιν ἀλλήλοις τῆς ἀδικίας κατὰ τὴν τοῦ χρόνου τάξιν.

[Immediately before, it has been said that the elements can be traced back to the ἄπειρον.]

[1] Diels, op. cit., I, 48, fr. 3. [2] See *Waiting on God* (Routledge, 1951), pp. 157–69.
[3] Diels, op. cit., I, 47, fr. 2.

'*Things are created out of indeterminate matter, and destruction is a return to the indeterminate, according to necessity; for things are exposed to a mutual punishment and expiation towards one another because of their injustices, according to the order of time.*'[1]

[In other words, the mechanical necessity by which matter is determined contains a sort of nemesis through the mutual compensation for ruptures of equilibrium and is therefore an image of the divine justice. Plato had retained this thought. Our own science has lost it, thus breaking every link with the spiritual life.]

Philolaus, Pythagorean
Nicom., arithm.

ἔστι ἁρμονία πολυμιγέων ἕνωσις καὶ δίχα φρονεόντων συμφρόνησις.

'*Harmony is the unity of a mixture of many, and the single thought of separated thinkers.*'[2]

[The second part of the definition must, it seems to me, apply to one being in several persons.

We may place alongside it another Pythagorean formula:

φιλίαν ἐναρμόνιον ἰσότητα

'*Friendship is an equality composed of harmony.*'[3]

These two formulae together would make a perfect starting-point for a theologian wishing to speak about love in the Trinity.]

πάντα γε μὴν τὰ γιγνωσκόμενα ἀριθμὸν ἔχουσι· οὐ γὰρ οἷόν τε οὐδὲν οὔτε νοηθῆμεν οὔτε γνωσθῆμεν ἄνευ τούτου.

'*All known things have a number* (partake in number?). *For nothing can be thought or known without number.*'[4]

[As regards this text, it must be remembered, in order to avoid misunderstanding, that in Greece ἀριθμός, λογισμός and λόγος were synonyms—especially after the discovery of incommensurables, which were called λόγοι ἄλογοι. The best proof of this is that Aristotle said that when Plato talked about

[1] *Ibid.*, I, 89, fr. 1. [2] *Ibid.*, 410, fr. 10.
[3] *Ibid.*, 451, lines 12–13. [4] *Ibid.*, I, 408, fr. 4.

'*participation in the ideas*' instead of '*imitation of the numbers*' he altered only one word of the Pythagorean doctrine. In these texts, therefore, one might in our language, which is defective anyway, say Word instead of number. At the same time it is also true, though secondarily, that these texts are related to arithmetic.

In parenthesis, the discovery of incommensurables, so far from being a defeat for the Pythagoreans as is so naïvely believed, was their most wonderful triumph. Cf. below, a text from the *Epinomis*.]

ἴδοις δὲ οὐ μόνον ἐν τοῖς δαιμονίοις καὶ θείοις πράγμασιν τὴν τοῦ ἀριθμοῦ φύσιν καὶ τὴν δύναμιν ἰσχύουσαν, ἀλλὰ καὶ ἐν τοῖς ἀνθρωπικοῖς ἔργοις καὶ λόγοις πᾶσι παντᾶ καὶ κατὰ τὰς δημιουργίας τὰς τεχνικὰς πάσας καὶ κατὰ τὴν μουσικήν.

'*You see that the essence and virtue do not only reign among religious and divine things but also in all human actions and relations and in everything connected with the technique of crafts and with music.*'[1]

[This shows that the true significance of early Greek mathematics, the foundation of our science, was religious. And this is confirmed by a passage in the Epinomis, 990d:

... ὃ καλοῦσι μὲν σφόδρα γελοῖον ὄνομα γεωμετρίαν, τῶν οὐκ ὄντων δὲ ὁμοίων ἀλλήλοις φύσει ἀριθμῶν ὁμοίωσις πρὸς τὴν τῶν ἐπιπέδων μοῖραν γεγονυῖά ἐστι διαφανής· ὃ δὴ θαῦμα ὀυκ ἀνθρώπικον ἀλλὰ γεγονὸς θεῖον φανερὸν ἂν γίγνοιτο τῷ δυναμένῳ ξυννοεῖν.

'... *what is ridiculously called land-measuring*[2] *and is really the assimilation to one another of numbers not naturally similar, an assimilation made manifest by the destiny of plane figures. It is clear to anyone who is able to understand it that this marvel is not of human but of divine origin.*'

This signifies that geometry is the science of the search for proportional means (similar, in Greek, signifies proportional) by way of the incommensurable proportion [i.e.: $\sqrt{(n \times m)}$], and that it proceeds from a supernatural revelation. If we compare this with the passages in which Plato describes the mediation between God and man by the image of the proportional mean ($a/b = b/c$) and with the numerous Gospel passages in which

[1] Diels, op. cit., I, 412, fr. 11.

[2] i.e. geometry.

Christ uses the same image for his own function as mediator (as my Father hath sent me, even so send I you, etc.) then the invention of geometry in Greece in the sixth century B.C. appears to be in the strictest sense of the word a prophecy.

The least inexact translation of the beginning of the Gospel of St. John might be:

'*In the beginning was the Mediation, and the Mediation was with God, and the Mediation was God. The same was in the beginning with God. All things were made by it; and without it was not anything made that was made. In it was life; and the life was the light of men. And the light shone in the darkness, and the darkness comprehended it not. ... That was the true Light, which lighteth every man, come down into the world; it was in the world, and the world was made by it, and the world knew it not. It came towards its own, and its own received it not. But as many as received it, to them it gave the power to become the children of God; them that believe in his name, which were born, not of blood, nor of the will of the flesh, nor of the will of man, but of God. And the Mediation was made flesh and dwelt among us, and we beheld its glory, like the glory of an only son alongside his father, in the fullness of grace and truth.*'

Just as the intelligence is a degraded equivalent of supernatural light, so proportion or ratio—which belongs to the intelligence—is a degraded equivalent of Mediation.

The necessity which constitutes the mechanism of matter is nothing else but a tissue of ratios; and the reality of the external world is constituted by nothing else but necessity, as is easily demonstrated by an analysis of perception, in the sense indicated by Lagneau.

In the same way the divine Mediation descending, by analogy, into the world, pervades everything. It unites God to God, God to the world, and the world to itself; it constitutes reality in every domain.

All of this is to be found expressed in the single term λόγος as the name of the second Person of the Trinity.

And this is also exactly what is expressed in Plato's words: ὁ θεὸς ἀεὶ γεωμετρεῖ,[1] when related to the passage of the *Epinomis* and another well-known one in the *Gorgias* (about 'geometrical equality').

[1] 'God is ever a geometer'.

For the Pythagoreans, unity represents God (and they have been suspected of polytheism!). They said: '*Justice is a number to the second power.*'

In other words, justice is that between which and God there is naturally mediation. (It is a name for God himself.)

On the other hand, there is not naturally mediation between sinners and God (they are 'numbers not naturally similar'), just as there is not between unity and numbers other than square.

But in the same way that geometry, through the destiny (μοῖρα) of plane figures, supplies a miraculous (θαῦμα) mediation for these numbers, so there is a miraculous operation, contrary to nature, which establishes a mediation between criminal humanity and God ('assimilates to one another numbers not naturally similar').

Thus λόγος, ἀριθμός, γεωμετρία, ἁρμονία, all of them signify Mediation.

These comparisons may appear arbitrary, but they confer perfect coherence and intelligibility upon texts which, if I mistake not, can acquire it only in this way. And there is no other criterion for piecing together a fragmented mosaic.

The sole alternative to this interpretation is to concede that the Greeks wrote incoherent and unintelligible things. And that is what people have done up to now, but they were wrong. The mistake was to judge the Greeks as if they were like ourselves.

Here is another parallel. In the *Timaeus*[1] Plato speaks of space as if it were the form of something which corresponds to what the Virgin is in the Catholic doctrine (ever intact matrix, mother who gives birth through union with the divine Model, reality which participates in the spiritual in an inconceivable way, etc.). And in the *Epinomis* he speaks of the predestination of plane figures, and therefore of space, for the miraculous working of mediation.

This is the discovery that intoxicated the Greeks: that the reality of the sensible universe is constituted by a necessity whose laws are the symbolic expression of the mysteries of faith.

(This had probably always been known, but preserved in secret doctrines; and the Greeks perhaps rediscovered it.)

It was certainly still known by the first Christians.

[1] 50b–51a.

There would seem to be an allusion to symbolism of this kind in the marvellous and incomprehensible words of St. Paul:

'*That ye, being rooted and grounded in love, may be able to comprehend with all saints what is the breadth, and length, and depth, and height; and to know the love of Christ, which passeth knowledge.*'[1]

The number of wonderfully beautiful, and today totally unintelligible, texts in the New Testament shows clearly that an infinitely precious part of the Christian doctrine has disappeared.

It is very probable that it was systematically destroyed by the Roman Empire in the process of domesticating Christianity.

For neutralizing a faith, there is no more admirable method than to begin by exterminating the majority of those who hold it and then to make it the official doctrine of an idolatrous State. After which, one exterminates the heretics; and nothing is easier than to include among them those who are trying to conserve the authentic faith. And one canonizes people like St. Augustine.

We can see today how successful the operation was, because the spirit of pagan Rome, after twenty centuries, is inundating the universe—including ourselves.

If the gates of Hell have really not prevailed, this can only mean that the true faith still lives in secret in the hearts of a few hidden beings. But they are well hidden.

It is extraordinary that the official adoption of Christianity by the Empire should be adduced as a proof that the blood of the martyrs had triumphed over their persecutors, when, on the contrary, it proves that the persecutions were amazingly successful. For under Augustus the mysteries of Eleusis, though reduced to a pitiful caricature, did not allow themselves to be turned into an official Roman religion.

For the rest, either the Roman Empire was cheating when it pretended to adopt the Christian religion, or else the Apocalypse lied. For although it is not true, as is sometimes said, that Rome is represented by the Beast, there seems no doubt that she is represented by the woman full of the names of blasphemy, drunk with the blood of the saints, mother of fornications and

[1] Ephesians 3. 17–19.

earthly abominations, seated on the seven hills. And this would be a lie, if the Empire had been baptizable.

The two catastrophes in the history of Christianity have been Constantine's decision to make Christianity official, and the war against the Albigensians accompanied by the Inquisition. St. Augustine came after the first catastrophe, St. Thomas after the second.]

Περὶ δὲ φύσιος καὶ ἁρμονίας ὧδε ἔχει· ἡ μὲν ἐστὼ τῶν πραγμάτων αἰδιος οὐσία καὶ αὐτὴ μὲν ἡ φύσις θείαν γε καὶ οὐκ ἀνθρωπίνην ἐνδέχεται γνῶσιν πλέον γε ἢ ὅτι οὐχ οἷον τ'ἦν οὐθὲν τῶν ἐόντων καὶ γιγνωσκόμενον ὑφ' ἡμῶν γε γενέσθαι μὴ ὑπαρχούσας τᾶς οὐσίας τῶν πραγμάτων, ἐξ ὧν συνέστα ὁ κόσμος, καὶ τῶν περαινόντων καὶ τῶν ἀπείρων. Ἐπεὶ δὲ καὶ ἀρχαὶ ὑπᾶρχον οὐχ ὁμοῖαι οὐδ' ὁμόφυλοι οὖσαι, ἦδη ἀδύνατον ἦς κα αὐταῖς κοσμηθῆναι, ἐι μὴ ἁρμονία ἐπεγένετο ὡτινιῶν ἥδε τρόπῳ ἐγένετο, τὰ μὲν οὖν ὁμοῖα καὶ ὁμόφυλα ἁρμονίας οὐδὲν ἐπεδέοντο, τὰ δὲ ἀνόμοια μηδὲ ὁμόφυλα μηδὲ ἰσοταγῆ ἀνάγκη τῇ τοιαύτῃ ἁρμονίᾳ συγκεκλεῖσθαι, οἵῃ μέλλουσι ἐν κόσμῳ κατέχεσθαι.

'*As regards nature and harmony, it is as follows.*

That which constitutes the eternal essence of things, and nature itself, is the object of divine and not of human knowledge, except for this: It would be impossible for us to know anything of what exists if there were not, to begin with, the essence of the things which constitute the order of the world, both the reality which determines and the reality which is indeterminate. But since at the beginning there are found dissimilar principles, of different kinds, it would be impossible for an order of the world to arise out of them unless harmony were added to them, in whatever manner produced. Similar things, of the same kind, have no need of harmony. But things which are neither similar nor of the same kind nor the same rank need to be locked in by a harmony appropriate for enclosing them within a world order.'[1]

An obscure text, but marvellous. Cf. Christ's word: '*I am the door*';[2] and St. Paul: '*Having made peace through the blood of his cross, by him to reconcile all things with himself; by him, I say, whether they be things in earth or things in heaven*';[3] and Christ's reproach to the Pharisees: '*Woe unto you, lawyers! for ye have taken away the key of knowledge.*'[4]

[1] Diels, op. cit., I, 408–9, fr. 6.
[2] John 10. 7 and 9.
[3] Colossians 1. 20.
[4] Luke 11. 52.

Note that the two principles are not, as is usually said, limit and the unlimited, but the indeterminate and *that which* assigns a limit; that is to say, God, who tells the waves: 'Thus far and no farther', etc. Harmony encloses together God and matter in one and the same world. It is evident, therefore, that it is the Logos.

12 *Some Thoughts on the Love of God*

This essay appeared in *Pensées sans ordre concernant l'amour de Dieu* (Gallimard, 1962). It was probably written at Marseilles between October 1940 and May 1942, and it may have been intended as part of a larger work.

To believe in God is not a decision that we can make. All we can do is to decide not to give our love to false gods. In the first place, we can decide not to believe that the future contains for us an all-sufficient good. The future is made of the same stuff as the present. We are well aware that the good which we possess at present, in the form of wealth, power, consideration, friends, the love of those we love, the well-being of those we love, and so on, is not sufficient; yet we believe that on the day when we get a little more we shall be satisfied. We believe this because we lie to ourselves. If we really reflect for a moment we know it is false. Or again, if we are suffering illness, poverty, or misfortune, we think we shall be satisfied on the day when it ceases. But there too, we know it is false; so soon as one has got used to not suffering one wants something else. In the second place, we can decide not to confuse the necessary with the good. There are a number of things which we believe to be necessary for our life. We are often wrong, because we should survive if we lost them. But even if we are right, even if they are things whose loss might kill us or at least destroy our vital energy, that does not make them good; because no one is satisfied for long with purely and simply living. One always wants something more; one wants something to live for. But it is only necessary to be honest with oneself to realize that there is nothing in this world to live for. We have only to imagine all our desires satisfied; after a time we should become discontented. We should want something else and we should be miserable through not knowing what to want.

A thing that everyone can do is to keep his attention fixed upon this truth.

Revolutionaries, for example, if they didn't lie to themselves, would know that the achievement of the revolution would make them unhappy, because they would lose their reason for living. And it is the same with all desires.

Life as it is given to men is unbearable without recourse to lying. Those who refuse to lie and who prefer to realize that life is unbearable, though without rebelling against fate, receive in the end, from somewhere beyond time, something which makes it possible to accept life as it is.

Everyone feels the existence of evil and feels horror at it and wants to get free from it. Evil is neither suffering nor sin; it is both at the same time, it is something common to them both. For they are linked together; sin makes us suffer and suffering makes us evil, and this indissoluble complex of suffering and sin is the evil in which we are submerged against our will, and to our horror.

A part of the evil that is within us we project into the objects of our attention and desire; and they reflect it back to us, as if the evil came from them. It is for this reason that any place where we find ourselves submerged in evil inspires us with hatred and disgust. It seems to us that the place itself is imprisoning us in evil. Thus an invalid comes to hate his room and the people around him, even if they are dear to him; and workers sometimes hate their factory, and so on.

But if through attention and love we project a part of our evil upon something perfectly pure, it cannot be defiled by it; it remains pure and does not reflect the evil back on us; and so we are delivered from the evil.

We are finite beings, and the evil in us is also finite; therefore by this method, if human life lasted long enough, we could be absolutely sure of being delivered in the end, in this world itself, from all evil.

The words of the Lord's Prayer are perfectly pure. Anyone who repeats the Lord's Prayer with no other intention than to bring to bear upon the words themselves the fullest attention of which he is capable is absolutely certain of being delivered in this way from a part, however small, of the evil he harbours within him. It is the same if one contemplates the Blessed Sacrament with no other thought except that Christ is there; and so on.

Nothing is pure in this world except sacred objects and sacred

texts, and the beauty of nature when looked at for itself and not as a background for day-dreams, and also, to a lesser degree, those human beings in whom God dwells and those works of art which are of divine inspiration.

That which is perfectly pure can be nothing other than God present in this world. If it were something other than God it would not be pure. If God were not present we could never be saved. In the soul in which this contact with purity has taken place, all its horror at the evil it harbours is changed into love for the divine purity. It was in this way that Mary Magdalene and the good thief became privileged by love.

The sole obstacle to the transmutation of horror into love is the self-regard which makes it painful to expose one's defilement to contact with purity. This can only be overcome if one has a kind of indifference about one's own defilement, so that one is capable of rejoicing, without regard to oneself, at the thought that something pure exists.

Contact with purity effects a transformation in evil. Only in this way can there be release from the indissoluble complex of suffering and sin. Through this contact, suffering gradually ceases to be mixed with sin; while sin transforms itself into simple suffering. This supernatural operation is what is called repentance. It is as though some joy were to shine upon the evil in us.

That there should have been one perfectly pure being present on earth was enough to make him the divine lamb which takes away the world's sin and to cause the greatest possible amount of the evil diffused around him to concentrate upon him in the form of suffering.

He has left some perfectly pure things as remembrances of himself; that is to say, things in which he is present, for otherwise their purity would fade away through being in contact with evil.

But people are not in churches all the time, and it is particularly desirable that this supernatural operation of transferring the evil from within oneself to outside should be able to occur in the places where everyday life is lived, and especially in places of work.

This can only be done through symbols making it possible to read the divine truths in the circumstances of daily life and work in the same way that they are expressed in phrases by written

letters. For this purpose the symbols must not be arbitrary but must be found inscribed, by a providential arrangement, in the very nature of things. The Gospel parables are an example of this symbolism.

There is indeed an analogy between the divine truths and the mechanical relations which constitute the order of the world of sense. The law of gravity which is sovereign on earth over all material motion is the image of the carnal attachment which governs the tendencies of the soul. The only power that can overcome gravity is solar energy. It is because this energy comes down to earth and is received by plants that they are able to grow vertically upwards. It enters into animals and men through the act of eating, and it is only thanks to this that we are able to hold ourselves erect and lift things up. Every source of mechanical energy—water power, coal, and very probably petroleum—derives in the same way from it; so it is the sun that drives our motors and lifts our aeroplanes, as it also lifts the birds. We cannot go and fetch this solar energy, we can only receive it. The energy comes down. It enters into plants and is with the seed, buried underground in darkness; it is there that its fertility becomes most active, inciting the movement from below upwards which makes the wheat or the tree grow. Even in a dead tree or a wooden beam it is still there, maintaining the vertical line; and we use it to build houses. It is the image of grace, which comes down to be buried in the darkness of our evil souls and is the only source of energy which can counteract the trend towards evil which is the moral law of gravity.

It is not the farmer's job to go in search of solar energy or even to make use of it, but to arrange everything in such a way that the plants capable of using it and transmitting it to us will receive it in the best possible conditions. And the effort he puts into this work does not come from himself but from the energy supplied to him by food, in other words, by this same solar energy contained in plants and in the flesh of animals nourished by plants. In the same way, the only effort we can make towards the good is so to dispose our soul that it can receive grace, and it is grace which supplies the energy needed for this effort.

A farmer or husbandman is like an actor continually playing a role in a sacred drama which represents the relations between God and the creation.

It is not only the source of solar energy that is inaccessible to man, but also the power which transforms this energy into food. Modern science considers this power to reside in the vegetable substance called chlorophyll; antiquity said sap instead of chlorophyll, but it comes to the same thing. Just as the sun is the image of God, so the vegetable sap—which can use the solar energy, and which makes plants and trees rise up straight in defiance of gravity, and which offers itself to be crushed and destroyed inside us and so to maintain our life—is the image of the Son, the Mediator. The farmer's whole work consists in serving this image.

Poetry like this should suffuse agricultural labour with a light of eternity. Without it, the work is so monotonous that the workers may easily sink into despairing apathy or seek the grossest relaxations; for their work reveals too obviously the futility which afflicts all human conditions. A man works himself to exhaustion in order to eat, and he eats in order to get strength to work, and after a year of labour everything is exactly as it was at the beginning. He works in a circle. Monotony is only bearable for man if it is lit up by the divine. But for this very reason a monotonous life is much the more propitious for salvation.

13 *Some Reflections on the Love of God*

See the note on the previous essay. This essay also appeared in *Pensées sans ordre concernant l'amour de Dieu*, and may have been intended as part of a larger work, for which Simone Weil appears to have hesitated between the titles 'Pensées' and 'Réflexions'.

The love that God bears us is, at any moment, the material and substance of our very being. God's creative love which maintains us in existence is not merely a superabundance of generosity, it is also renunciation and sacrifice. Not only the Passion but the Creation itself is a renunciation and sacrifice on the part of God. The Passion is simply its consummation. God already voids himself of his divinity by the Creation. He takes the form of a slave, submits to necessity, abases himself. His love maintains in existence, in a free and autonomous existence, beings other than himself, beings other than the good, mediocre beings. Through love, he abandons them to affliction and sin. For if he did not abandon them they would not exist. His presence would annul their existence as a flame kills a butterfly.

Religion teaches that God created finite beings of different degrees of mediocrity. We human beings are aware that we are at the extreme limit, the limit beyond which it is no longer possible to conceive or to love God. Below us there are only the animals. We are as mediocre and as far from God as it is possible for creatures endowed with reason to be. This is a great privilege. It is for us, if he wants to come to us, that God has to make the longest journey. When he has possessed and won and transformed our hearts it is we in our turn who have to make the longest journey in order to go to him. The love is in proportion to the distance.

It was by an inconceivable love that God created beings so distant from himself. It is by an inconceivable love that he comes down so far as to reach them. It is by an inconceivable love that they then ascend so far as to reach him. It is the same

love. They can only ascend by the same love which God bestowed on them when he came down to seek them. And this is the same love by which he created them at such a great distance from him. The Passion is not separable from the Creation. The Creation itself is a kind of passion. My very existence is like a laceration of God, a laceration which is love. The more mediocre I am, the more obvious is the immensity of the love which maintains me in existence.

The evil which we see everywhere in the world in the form of affliction and crime is a sign of the distance between us and God. But this distance is love and therefore it should be loved. This does not mean loving evil, but loving God through the evil. When a child in his play breaks something valuable, his mother does not love the breakage. But if later on her son goes far away or dies she thinks of the incident with infinite tenderness because she now sees it only as one of the signs of her child's existence. It is in this way that we ought to love God through everything good and everything evil, without distinction. If we love only through what is good, then it is not God we are loving but something earthly to which we give that name. We must not try to reduce evil to good by seeking compensations or justifications for evil. We must love God through the evil that occurs, solely because everything that actually occurs is real and behind all reality stands God. Some realities are more or less transparent; others are completely opaque; but God is behind all of them, without distinction. It is for us simply to keep our eyes turned towards the point where he is, whether we can see him or not. If there were no transparent realities we should have no idea of God. But if all realities were transparent it would not be God but simply the sensation of light that we would be loving. It is when we do not see God, it is when his reality is not sensibly perceptible to any part of our soul, that we have to become really detached from the self in order to love him. That is what it is to love God.

For this it is necessary to keep one's eyes constantly turned towards God, without ever moving. Otherwise, how should we know the right direction when the opaque screen comes between the light and us? We have to remain absolutely motionless.

To remain motionless does not mean to abstain from action. It is spiritual, not material immobility. But one must not act, or,

indeed, abstain from acting, by one's own will. In the first place, we must perform only those acts to which we are constrained by a strict obligation, and then those which we honestly believe to have been enjoined upon us by God; and finally, if there remains an indefinite zone, those to which a natural inclination prompts us, provided they involve nothing illegitimate. In the sphere of action, it is only the fulfilment of strict obligations that calls for an effort of will. Acts arising from inclination are clearly not an effort. And, as for acts of obedience to God, they are performed passively; whatever pains may accompany them, they call for no effort, strictly speaking; it is not active effort but rather patience and capacity to endure and suffer. Their model is the crucifixion of Christ. Even though an act of obedience, when seen from outside, may seem accompanied by a great expenditure of activity there is in reality, within the soul, nothing but passive endurance.

There is, however, one effort to be made, and by far the hardest of all, but it is not in the sphere of action. It is keeping one's gaze directed towards God, bringing it back when it has wandered, and fixing it sometimes with all the intensity of which one is capable. This is very hard, because all the mediocre part of ourselves which is almost the whole of us—which *is* us, and is what we mean when we say 'I'—feels that this fixed gaze towards God condemns it to death. And it does not want to die. It rebels. It fabricates every falsehood that can possibly divert our attention.

One of these falsehoods is the false gods which are given the name of God. We may believe we are thinking about God when what we really love is certain people who have talked to us about him, or a certain social atmosphere, or certain ways of living, or a certain calm of soul, a certain source of joyful feeling, hope, comfort, or consolation. In such cases the mediocre part of the soul is perfectly safe; even prayer is no threat to it.

Another falsehood has to do with pleasure and pain. We are well aware that the lure of pleasure or the fear of pain sometimes makes us act, or fail to act, in ways which oblige us to turn our eyes away from God; and when this happens we think we have been conquered by pleasure or pain, but this is very often an illusion. Very often the pleasure or pain of the senses are simply a pretext employed by the mediocre part of us for turning away

from God. In themselves they have not so much power; not even an intoxicating pleasure or a violent pain are so very difficult to renounce or endure. We see it done every day by very mediocre people. But it is infinitely difficult to renounce even a very slight pleasure or to expose oneself to a very slight pain solely for the sake of God, the true God, that is to say, the one who is in heaven and not anywhere else. Because to make that effort is an approach, not towards suffering but towards death; and towards a death which is more radical than that of the body and equally repellent to nature: the death of the thing within us that says 'I'.

It does sometimes happen that the flesh turns us away from God, but often when we think this has happened it is really the other way round. The soul being unable to bear the deadly presence of God, that searing flame, takes refuge behind the flesh and uses it like a screen. In this case it is not the flesh which makes us forget God, it is the soul which tries to forget God by burying itself within the flesh. This is no longer a question of weakness but of treason, and we are always tempted to this treason so long as the mediocre part of the soul is much stronger than the part that is pure. A fault very slight in itself may be an act of treason of this kind, and in that case it is infinitely worse than faults which are very bad in themselves but which are the result of weakness. Treason is not avoided by an effort, by doing violence to oneself, but by a simple act of choice. It suffices to regard as a stranger and enemy the part of us that wants to hide itself from God—even if that part is almost the whole of us, even if it *is* us. We must constantly renew within ourselves the vow of adherence to that part of us which calls for God, even when it is still only infinitely small. This infinitesimal part, so long as we adhere to it, increases exponentially by a geometrical progression like the series 2, 4, 8, 16, 32, etc., as a seed grows, and this happens without our taking any part in the process. We can arrest this growth by refusing it our adherence, and we can retard it by failing to use our will against the unruly movements of the physical part of the soul. But nevertheless when it does take place this growth takes place in us without any action by us.

Another pitfall, another deception by the mediocre part of us in its attempt to avoid death, is the misplaced effort towards

the good, or towards God. This is a particularly dangerous deception because it is very difficult to understand why such efforts are false. Everything seems to suggest that the mediocre part of us is much better informed than we are about the conditions of salvation, so that one is impelled to believe in the existence of something like the devil. There are people whose manner of seeking God is like a man making leaps into the air in the hope that, if he jumps a little higher each time, he will end by staying up there and rising into heaven. This is a vain hope. In Grimm's tale of 'The Valiant Little Tailor' there is a trial of strength between the little tailor and a giant. The giant hurls a stone high into the air, so that it takes a very, very long time to fall down again. The little tailor, who has a bird in his pocket, says he can do much better and that the stones he throws don't come down; and he releases his bird. Everything without wings always comes down to earth again. People who make athletic leaps towards heaven are too absorbed in the muscular effort to be able to look up to heaven; and in this matter the looking up is the one thing that counts. It is what makes God come down. And when God has come down to us he raises us, he gives us wings. The only effective and legitimate use of our muscular efforts is to keep at bay and suppress whatever may prevent us from looking up; they are negatively useful. The part of the soul which is capable of looking at God is surrounded by barking, biting, destructive dogs. They must be controlled by the whip. But there is also no objection to employing lumps of sugar when it is possible. In any case, whether by the whip or by sugar—both are in fact needed, in different proportions for different temperaments—what matters is to train the dogs and compel them to silence and immobility. This training is one of the conditions for spiritual ascension but it is not itself an elevating force. God alone is the elevating power, and he comes when we look towards him. To look towards him means to love him. There is no other relation between man and God except love. But our love for God should be like a woman's love for a man, which dares not express itself by making advances but consists only in waiting. God is the Bridegroom, and it is for the bridegroom to come to the one he has chosen and speak to her and lead her away. The bride-to-be should only wait.

Pascal's words 'Thou wouldst not seek me if thou hadst not found me' are not the true expression of the relations between man and God. Plato is much more profound when he says 'Turn away with your whole soul from the things which pass.' It is not for man to seek, or even to believe in, God. He has only to refuse his love to everything which is not God. This refusal does not presuppose any belief. It is enough to recognize, what is obvious to any mind, that all the goods of this world, past, present or future, real or imaginary, are finite and limited and radically incapable of satisfying the desire which burns perpetually within us for an infinite and perfect good. All men know this, and more than once in their lives they recognize it for a moment, but then they immediately begin deceiving themselves again so as not to know it any longer, because they feel that if they knew it they could not go on living. And their feeling is true, for that knowledge kills, but it inflicts a death which leads to a resurrection. But they do not know that beforehand; all they foresee is death; they must either choose truth and death or falsehood and life. If one makes the first choice and holds to it, if one persists indefinitely in refusing to devote the whole of one's love to things unworthy of it, which means everything in this world without exception, that is enough. It is not a matter of self-questioning or searching. A man has only to persist in this refusal, and one day or another God will come to him. He will see and hear and cling to God, as Electra to Orestes; he will possess the certainty of an irrecusable reality. This does not mean that he will become incapable of doubting; to doubt is always both a faculty and a duty of the human mind; but doubt indefinitely prolonged destroys the illusory certainty of what is uncertain and confirms the certainty of what is certain. For any man of whom God has taken possession the doubt concerning the reality of God is purely abstract and verbal, much more abstract and verbal than the doubt concerning the reality of the things of sense. When such a doubt presents itself one has only to entertain it unreservedly to discover how abstract and verbal it is. Consequently, the problem of faith does not arise. Until God has taken possession of him, no human being can have faith, but only simple belief; and it hardly matters whether or not he has such a belief because he will arrive at faith equally well through incredulity.

The only choice before man is whether he will or will not attach his love to this world. Let him refuse to attach it, let him stay motionless, without searching, waiting in immobility and without even trying to know what he awaits, and it is absolutely certain that God will come all the way to him. To search is to impede rather than to facilitate God's operation. The man of whom God has taken possession no longer searches at all in the sense in which Pascal seems to use the word search.

How could we search for God, since he is above, in a dimension not open to us? We can only advance horizontally; and if we advance in this way, seeking our good, and the search succeeds, this result will be illusory and what we have found will not be God. A little child who suddenly perceives that he has lost his mother in the street runs about, crying, in all directions; but he is wrong. If he had the sense and courage to stay where he is and wait, she would find him sooner. We must only wait and call out. Not call upon someone, while we still do not know if there *is* anyone; but cry out that we are hungry and want bread. Whether we cry for a long time or a short time, in the end we shall be fed, and then we shall not believe but we shall *know* that there really is bread. What surer proof could one ask for than to have eaten it? But before one has eaten, it is neither needful nor particularly useful to believe in bread. What is essential is to know that one is hungry; and this is not belief, it is absolutely certain knowledge which can only be obscured by lies. All those who believe that food exists, or will one day be produced, in this world, are lying.

The food of heaven not only makes the good grow in us but it destroys the evil, which our own efforts can never do. The quantity of evil in us can only be reduced by fixing our gaze upon something perfectly pure.

14 *Morality and Literature*

This article appeared in the *Cahiers du Sud*, No. 263, January 1944, under the pseudonym of 'Emile Novis'.

Nothing is so beautiful and wonderful, nothing is so continually fresh and surprising, so full of sweet and perpetual ecstasy, as the good. No desert is so dreary, monotonous, and boring as evil. This is the truth about authentic good and evil. With fictional good and evil it is the other way round. Fictional good is boring and flat, while fictional evil is varied and intriguing, attractive, profound, and full of charm.

This is because there are necessities and impossibilities in reality which do not obtain in fiction, any more than the law of gravity to which we are subject controls what is represented in a picture. In the space that separates heaven from earth things fall easily and indeed inevitably whenever they are not supported; they never rise, or only a very little and by painful contrivance. A man coming down a ladder, who misses a step and falls, is either a sad or an uninteresting sight, even the first time we see it. But if a man were walking in the sky as though it were a ladder, going up into the clouds and coming down again, he could do it every hour of every day and we would never be tired of watching. It is the same with pure good; for a necessity as strong as gravity condemns man to evil and forbids him any good, or only within the narrowest limits and laboriously obtained and soiled and adulterated with evil; except when the supernatural appears on earth, which suspends the operation of terrestrial necessity. But if I paint a picture of a man walking up into the air it has no interest. That is a thing which is only interesting if it really happens. Unreality takes away all value from the good.

A man walking in the ordinary way is a sight of no interest, whereas men wildly jumping and leaping about would intrigue me for a few minutes. But if I notice that both the one and the

others are going barefoot on red-hot coals my reactions change. The jumping and leaping become frightful and unbearable to watch and, at the same time, behind the horror, tedious and monotonous, whereas my attention becomes passionately fixed upon the man who is walking naturally. Thus it is that evil, so long as it is fictional, acquires interest from the variety of forms it can assume, which then seem to spring from pure fancy. But the necessity which is inseparable from reality completely cancels this interest. The simplicity which makes the fictional good something insipid and unable to hold the attention becomes, in the real good, an unfathomable marvel.

It seems, therefore, that immorality is inseparable from literature, which chiefly consists of the fictional. It is quite wrong to reproach writers for being immoral unless one reproaches them at the same time for being writers, as there were people in the seventeenth century with the courage to do. Writers with pretensions to high morality are no less immoral than the others, they are merely worse writers. In them as in the others, whatever they do and in spite of themselves, good is tedious and evil is more or less attractive. One might, therefore, on these grounds, condemn the whole of literature *en bloc*. And why not? Writers and devoted readers will cry out that immorality is not an aesthetic criterion. But they must prove, as they have never done, that aesthetic criteria are the only ones applicable to literature. Since readers are not a separate animal species and since the people who read are the same ones who perform a great many other functions, it is impossible for literature to be exempted from the categories of good and evil to which all human activities are referred. Every activity is related to good and evil twice over: by its performance and by its principle. Thus a book may on the one hand be well or badly written and on the other hand it may originate either from good or from evil.

But it is not only in literature that fiction generates immorality. It does it also in life itself. For the substance of our life is almost exclusively composed of fiction. We fictionalize our future; and, unless we are heroically devoted to truth, we fictionalize our past, refashioning it to our taste. We do not study other people; we invent what they are thinking, saying, and doing. Reality provides us with some raw material, just

as novelists often take a theme from a news item, but we envelop it in a fog in which, as in all fiction, values are reversed, so that evil is attractive and good is tedious. If reality administers a hard enough shock to awaken us for an instant, by contact with a saint, for example, or by falling into the world of destitution or crime, or some other such experience, it is then and only then that we feel for a moment the horrible monotony of evil and the unfathomable marvel of good. But we soon relapse into the waking dream peopled by our fictions.

There is something else which has the power to awaken us to the truth. It is the works of writers of genius, or at least of those with genius of the very first order and when it has reached its full maturity. They are outside the realm of fiction and they release us from it. They give us, in the guise of fiction, something equivalent to the actual density of the real, that density which life offers us every day but which we are unable to grasp because we are amusing ourselves with lies.

Although the works of these men are made out of words there is present in them the force of gravity which governs our souls. It is present and manifest. In our souls, although this gravity is often felt, it is disguised by the very effects it produces; submission to evil is always accompanied by error and falsehood. The man falling down the slope of cruelty or terror cannot discern what is the force that impels him nor the relations between it and all the other external conditions. In the words assembled by genius several slopes are simultaneously visible and perceptible, placed in their true relations, but the listener or reader does not descend any of them. He feels gravity in the way we feel it when we look over a precipice, if we are safe and not subject to vertigo. He perceives the unity and the diversity of its forms in this architecture of the abyss. It is in this way that in the *Iliad* the slope of victory and the slope of defeat are manifest and simultaneously perceptible, as they never are for a soldier occupied in fighting. This sense of gravity, which only genius can impart, is found in the drama of Aeschylus and Sophocles, in certain plays of Shakespeare, in Racine's *Phèdre* alone among French tragedies, in several comedies of Molière, in the *Grand Testament* of Villon. There, good and evil appear in their truth. Those poets had genius, and it was a genius oriented towards the good. There are also

demoniacal geniuses; and they too have their maturity. But since the maturity of genius is conformity to the true relations of good and evil, the work which represents maturity of demoniacal genius is silence. Rimbaud is its example and symbol.

The sole *raison d'être* of all those writers who are not possessed by a genius of the very highest order in its full maturity is to constitute the milieu within which such a genius will one day appear. It is this function alone that justifies their existence, which ought otherwise to be prevented because of the immorality to which the nature of things condemns them. To reproach a writer for his immorality is to reproach him for having no genius, or only genius of the second order, if such an expression makes sense, or a still undeveloped genius. If he lacks genius it is not his fault, in a sense; but in another sense it is his one crime. It is completely vain to seek a remedy for the immorality of literature. The only remedy is genius, and the source of genius is beyond the scope of our efforts.

But what can and ought to be corrected, in view of this very fact of irremediable immorality, is the usurpation by writers of the function of spiritual guidance, for which they are totally unsuited. Only writers of the highest order of genius in their full maturity are fit to exercise those functions. As for all the other writers, unless they have a philosophic bent in addition to a literary one, which is rare, their conceptions about life and the world and their opinions on current problems can have no interest at all, and it is absurd that they should be called upon to express them. This abuse dates from the eighteenth century, and especially from romanticism, and it has introduced into literature a Messianic afflatus wholly detrimental to its artistic purity. Formerly, writers were domestics in great men's households, and although this position sometimes caused very painful situations it was much more favourable than the Messianic delusion, not only to the moral health of writers and public, but also to the art of literature itself.

It is only within the last fifty or twenty-five years that we have seen the gravest possible effects of this usurpation, because it is only since then that it has extended to the masses. No doubt there has always been a slight diffusion of bad literature, oral or written, among the people. But formerly it

had an antidote in the things of pure beauty which impregnated popular life—religious ceremonies, prayer, song, story, and dance. And above all, it was without authority. But during the last quarter of a century all the authority associated with the function of spiritual guidance, usurped by men of letters, has seeped down into the lowest publications. Because from these publications up to the highest literary production there was continuity, and the public knew it. In the one milieu of literary men, in which no one ever refused to shake anyone else's hand, were to be found those who occupied themselves exclusively with the lowest publications, and their occasional collaborators, and also our greatest names. Between a poem by Valéry and an advertisement for a beauty cream promising a rich marriage to anyone who used it there was at no point a breach of continuity. So as a result of literature's spiritual usurpation a beauty cream advertisement possessed, in the eyes of little village girls, the authority that was formerly attached to the words of priests. Is it surprising that we should have sunk to where we now are? To have permitted that state of affairs is a crime for which all who can hold a pen should bear the responsibility as a remorse.

For centuries the function of director of conscience had been exclusively in the hands of priests. They often performed it atrociously badly, as witness the fires of the Inquisition, but at least they had some title to it. In reality it is only the greatest saints who can perform it, as it is only the greatest geniuses among writers. But all priests, in virtue of their profession, speak in the name of the saints and look to them for inspiration and try to imitate and follow them, and principally the one veritable saint, who is Christ. Or if they do not, as in fact often happens, they are failing in their duty. But in so far as they do it they are able to communicate more good than they themselves possess. A writer, on the other hand, has only himself to fall back on; he may be influenced by a number of other writers, but he cannot draw his inspiration from them.

When, as a result of what was called Enlightenment in the eighteenth century, the priests had in fact almost entirely lost this function of guidance, their place was taken by writers and scientists. In both cases it is equally absurd. Mathematics, physics, and biology are as remote from spiritual guidance as the

art of arranging words. When that function is usurped by literature and science it proves that there is no longer any spiritual life. Numerous signs today seem to indicate that this usurpation by writers and scientists has come to an end, although the appearance of it still lingers. This should be a matter for rejoicing, were there not reason to fear that they will be replaced by something much worse than themselves.

But the works of authentic genius from past ages remain, and are available to us. Their contemplation is the ever-flowing source of an inspiration which may legitimately guide us. For this inspiration, if we know how to receive it, tends—as Plato said—to make us grow wings to overcome gravity.

15 *The Responsibility of Writers*

This letter appeared in the *Cahiers du Sud*, No. 310 (1951), but was probably written in the summer of 1941. The controversy referred to in the first line was, of course, about whether the amorality of modern literature was a contributing factor in the disasters of 1940 and, more generally, in the demoralization of modern life.

The allusion by Gros to the controversy about the responsibility of writers impels me to return to the subject, in defence of a point of view opposed to that of the review and of almost everyone I sympathize with, and seeming, unfortunately, to resemble the one held by people for whom I feel no sympathy at all.

I believe in the responsibility of the writers of recent years for the disaster of our time. By that I don't mean only the defeat of France; the disaster of our time extends much further. It extends to the whole world, that is to say, to Europe, to America, and to the other continents in so far as Western influence has penetrated them.

It is true, as Mauriac has observed, that the best contemporary books are very little read. But the responsibility of writers cannot be measured by circulation figures. For literature has immense prestige. This was shown by the efforts which used to be made by certain political bodies to obtain the support of well-known writers' names for demagogic purposes. And even those who have never heard the celebrated writers' names feel the prestige of the literature which is unknown to them. People have never read so much as today. They don't read books but they read mediocre or bad periodicals. These periodicals penetrate everywhere, in village and suburb; and, thanks to the literary customs of our time, there is no break of continuity between the worst of these periodicals and the best of our writers. This fact, which is known or, rather, confusedly felt by the public, endows the basest publicity rackets in their eyes with all the prestige of high literature. In recent years there

have been some unbelievable degradations; for example, advice on love affairs by well-known writers. Of course they didn't all degrade themselves in this way; far from it. But those who did so degrade themselves were not disowned or repulsed by the others; they continued to enjoy the esteem accorded to their profession. Such easy morals in literature, such tolerance of baseness, involve our most eminent writers in responsibility for demoralizing little country girls who have never left their villages and have never heard the writers' names.

But writers have a more direct responsibility.

The essential characteristic of the first half of the twentieth century is the growing weakness, and almost the disappearance, of the idea of value. This is one of those rare phenomena which seem, as far as one can tell, to be really new in human history, though it may be, of course, that it has occurred before during periods which have since vanished in oblivion, as may also happen to our own period. It has appeared in many domains outside literature, and even in all of them. In industry, the substitution of quantity for quality; among the workers, the discrediting of skilled workmanship; among students, the substitution of diplomas for culture as the aim of education. Even in science there is no longer any criterion of value since classical science was discarded. But above all it was the writers who were the guardians of the treasure that has been lost; and some of them now take pride in having lost it.

Dadaism and surrealism are extreme cases; they represented the intoxication of total licence, the intoxication in which the mind wallows when it has made a clean sweep of value and surrendered to the immediate. The good is the pole towards which the human spirit is necessarily oriented, not only in action but in every effort, including the effort of pure intelligence. The surrealists have set up non-oriented thought as a model; they have chosen the total absence of value as their supreme value. Men have always been intoxicated by licence, which is why, throughout history, towns have been sacked. But there has not always been a literary equivalent for the sacking of towns. Surrealism is such an equivalent.

The other writers of the same and the preceding period have gone less far, but almost all of them—with perhaps three or four exceptions—have been more or less affected by the same

disease, the enfeeblement of the sense of value. Such words as spontaneity, sincerity, gratuitousness, richness, enrichment—words which imply an almost total indifference to contrasts of value—have come more often from their pens than words which contain a reference to good and evil. Moreover, this latter class of words has become degraded, especially those which refer to the good, as Valéry remarked some years ago. Words like virtue, nobility, honour, honesty, generosity, have become almost impossible to use or else they have acquired bastard meanings; language is no longer equipped for legitimately praising a man's character. It is slightly, but only slightly, better equipped for praising a mind; the very word mind, and the words intelligence, intelligent, and others like them, have also become degraded. The fate of words is a touchstone of the progressive weakening of the idea of value, and although the fate of words does not depend upon writers one cannot help attributing a special responsibility to them, since words are their business.

The work of Bergson has been much and rightly praised in our day, and a lot has been said about its influence on the thought and literature of the period. Now, at the centre of the philosophy on which his first three books are based there is a conception which is totally alien to any considerations of value, namely, the conception of Life. The attempt to make this philosophy a foundation for Catholicism was very ill-judged, and in any case it was unnecessary because Catholicism has older foundations. And then there is the work of Proust, which makes many attempts to analyse non-oriented states of the soul; in his work the good only appears at those rare moments when, by the effect either of memory or of beauty, we are allowed a glimpse of eternity through the veil of time. One could make similar comments on many writers before and still more after 1914. In a general way, the literature of the twentieth century is essentially psychological; and psychology consists in describing states of the soul by displaying them all on the same plane without any discrimination of value, as though good and evil were external to them, as though the effort towards the good could be absent at any moment from the thought of any man.

Writers do not have to be professors of morals, but they do

have to express the human condition. And nothing concerns human life so essentially, for every man at every moment, as good and evil. When literature becomes deliberately indifferent to the opposition of good and evil it betrays its function and forfeits all claim to excellence. Racine laughed at the Jansenists in his youth, but he was no longer laughing at them when he wrote *Phèdre*, and *Phèdre* is his masterpiece. From this point of view it is not true that French literature possesses continuity. It is not true that Rimbaud and those who have followed him (if we except certain passages of the *Saison en Enfer*) are a continuation of Villon. What if Villon did steal? In his case the act of stealing was perhaps the result of necessity or perhaps a sin; it was not a thrill or a gratuitous act. The sense of good and evil permeates all his verse, as it permeates all work that is not irrelevant to man's destiny.

It is true that there is a certain kind of morality which is even more alien to good and evil than amorality is. Those who are now blaming the eminent writers are worth infinitely less than they, and the 'moral revival' which certain people wish to impose would be much worse than the condition it is meant to cure. If our present suffering ever leads to a revival, this will not be brought about through slogans but in silence and moral loneliness, through pain, misery, and terror, in the profoundest depths of each man's spirit.

16 *The Love of God and Affliction*

The first part of this essay, written before May 1942, appeared in *Waiting on God* (Routledge, 1951). The second part was discovered later among Simone Weil's papers and was published, with the first, in *Pensées sans ordre concernant l'amour de Dieu* (Gallimard, 1962).

In the realm of suffering, affliction is something apart, specific and irreducible. It is quite a different thing from simple suffering. It takes possession of the soul and marks it through and through with its own particular mark, the mark of slavery. Slavery as practised by ancient Rome is simply the extreme form of affliction. The men of antiquity, who knew a lot about the subject, used to say: 'A man loses half his soul the day he becomes a slave.'

Affliction is inseparable from physical suffering and yet quite distinct. In suffering, all that is not bound up with physical pain or something analogous is artificial, imaginary, and can be eliminated by a suitable adjustment of the mind. Even in the case of the absence or death of someone we love, the irreducible part of the sorrow is akin to physical pain, a difficulty in breathing, a constriction of the heart, or an unsatisfied need, a hunger, or the almost biological disorder caused by the brutal unloosing of an energy hitherto absorbed by an attachment and now left undirected. A sorrow which is not centred around an irreducible core of such a nature is mere romanticism or literature. Humiliation is also a violent condition of the whole physical being, which wants to rise up against the outrage but is forced, by impotence or fear, to hold itself in check.

On the other hand a pain which is only physical is of very little account, and leaves no mark on the soul. Toothache is an example. An hour or two of violent pain caused by a bad tooth is nothing once it is over.

It is another matter if the physical suffering is very prolonged or frequent, but this is often something quite different from an attack of pain; it is often an affliction.

Affliction is an uprooting of life, a more or less attenuated equivalent of death, made irresistibly present to the soul by the attack or immediate apprehension of physical pain. If there is complete absence of physical pain there is no affliction for the soul, because thought can turn itself away in any direction. Thought flies from affliction as promptly and irresistibly as an animal flies from death. Here below, physical pain and nothing else has the power to chain down our thoughts; provided that we count as physical pain certain phenomena which, though difficult to describe, are bodily and are strictly equivalent to it; in particular, for example, the fear of physical pain.

When thought is obliged by an attack of physical pain, however slight, to recognize the presence of affliction, this produces a state of mind as acute as that of a condemned man who is forced to look for hours at the guillotine which is going to behead him. Human beings can live twenty years, fifty years, in this acute state. We pass by them without noticing. What man is capable of discerning them unless Christ himself looks through his eyes? We notice only that they sometimes behave strangely, and we censure this behaviour.

There is not real affliction unless the event which has gripped and uprooted a life attacks it, directly or indirectly, in all its parts, social, psychological, and physical. The social factor is essential. There is not really affliction where there is not social degradation or the fear of it in some form or another.

There is both continuity and a separating threshold, like the boiling point of water, between affliction itself and all the sorrows which, even though they may be very violent, very deep, and very lasting, are not afflictions in the true sense. There is a limit; on the far side of it we have affliction but not on the near side. This limit is not purely objective; all sorts of personal factors have to be taken into account. The same event may plunge one human being into affliction and not another.

The great enigma of human life is not suffering but affliction. It is not surprising that the innocent are killed, tortured, driven from their country, made destitute or reduced to slavery, put in concentration camps or prison cells, since there are criminals to perform such actions. It is not surprising either that disease is the cause of long sufferings, which paralyse life

and make it into an image of death, since nature is at the mercy of the blind play of mechanical necessities. But it *is* surprising that God should have given affliction the power to seize the very souls of the innocent and to possess them as sovereign master. At the very best, he who is branded by affliction will only keep half his soul.

As for those who have been struck the kind of blow which leaves the victim writhing on the ground like a half-crushed worm, they have no words to describe what is happening to them. Among the people they meet, those who have never had contact with affliction in its true sense can have no idea of what it is, even though they may have known much suffering. Affliction is something specific and impossible to compare with anything else, just as nothing can convey the idea of sound to the deaf and dumb. And, as for those who have themselves been mutilated by affliction, they are in no state to help anyone at all and are almost incapable of even wishing to do so. Thus compassion for the afflicted is an impossibility. When it is really found, it is a more astounding miracle than walking on water, healing the sick, or even raising the dead.

Affliction constrained Christ to implore that he might be spared, to seek consolation from man, to believe he was forsaken by the Father. It constrained a just man to cry out against God; a just man as perfect as human nature can be; more so, perhaps, if Job is not so much a historical character as a figure of Christ. 'He laughs at the affliction of the innocent!' This is not blasphemy but a genuine cry of anguish. The Book of Job is a pure marvel of truth and authenticity from beginning to end. As regards affliction, all that departs from this model is more or less tainted with falsehood.

Affliction causes God to be absent for a time, more absent than a dead man, more absent than light in the utter darkness of a cell. A kind of horror submerges the whole soul. During this absence there is nothing to love. What is terrible is that if, in this darkness where there is nothing to love, the soul ceases to love, God's absence becomes final. The soul has to go on loving in the void, or at least to go on wanting to love, though it may be only with an infinitesimal part of itself. Then, one day, God will come to show himself to this soul and to reveal the beauty of the world to it, as in the case of Job. But if the

soul stops loving it falls, even in this life, into something which is almost equivalent to hell.

That is why those who plunge men into affliction before they are prepared to receive it are killers of souls. On the other hand, in a time such as ours, where affliction is hanging over us all, help given to souls is only effective if it goes far enough really to prepare them for affliction. That is no small thing.

Affliction hardens and discourages because, like a red-hot iron, it stamps the soul to its very depths with the contempt, the disgust, and even the self-hatred and sense of guilt and defilement which crime logically should produce but actually does not. Evil dwells in the heart of the criminal without being felt there. It is felt in the heart of the man who is afflicted and innocent. Everything happens as though the state of soul appropriate for criminals had been separated from crime and attached to affliction; and it even seems to be in proportion to the innocence of those who are afflicted.

If Job cries out that he is innocent in such despairing accents it is because he himself is unable to believe so, it is because his soul within him is on the side of his friends. He implores God himself to bear witness, because he no longer hears the testimony of his own conscience; it is no longer anything but an abstract, lifeless memory for him.

Men have the same carnal nature as animals. If a hen is hurt, the others rush up and peck it. The phenomenon is as automatic as gravitation. Our senses attach to affliction all the contempt, all the revulsion, all the hatred which our reason attaches to crime. Except for those whose whole soul is inhabited by Christ, everybody despises the afflicted to some extent, although practically no one is conscious of it.

This law of sensibility also holds good with regard to ourselves. In the case of someone in affliction, all the contempt, revulsion, and hatred are turned inwards; they penetrate to the centre of his soul and from there they colour the whole universe with their poisoned light. Supernatural love, if it has survived, can prevent this second result from coming about, but not the first. The first is of the very essence of affliction; there is no affliction without it.

'Christ . . . being made a curse for us.' It was not only the body of Christ, hanging on the wood, which was accursed, it

was his whole soul also. In the same way every innocent being in his affliction feels himself accursed. This even goes on being true for those who have been in affliction and have come out of it through a change in their fortunes, if the affliction has bitten deeply enough into them.

Another effect of affliction is, little by little, to make the soul its accomplice, by injecting a poison of inertia into it. In anyone who has suffered affliction for a long enough time there is a complicity with regard to his own affliction. This complicity impedes all the efforts he might make to improve his lot; it goes so far as to prevent him from seeking a way of deliverance, sometimes even to the point of preventing him from wishing for deliverance. Then he is established in affliction, and people may get the impression that he is quite contented. Even worse, this complicity may induce him, in spite of himself, to shun and flee from the means of deliverance; and for this it will resort to pretexts which are sometimes ridiculous. Even after a man has been relieved of his affliction, there will be something left in him which impels him to embrace it again, if it has pierced irrevocably into the depth of his soul. It is as though affliction had established itself in him like a parasite and was directing him for its own purposes. Sometimes this impulse triumphs over all the impulses of the soul towards happiness. If the affliction has been ended as the result of some kindness, it may take the form of hatred for the benefactor; this is the cause of certain apparently inexplicable acts of savage ingratitude. It is sometimes easy to deliver an unhappy man from his present distress, but it is difficult to set him free from his past affliction. Only God can do it. And even the grace of God himself cannot cure irremediably wounded nature in this world. The glorified body of Christ bore the marks of nail and spear.

One can only accept the existence of affliction by considering it as a distance.

God created through love and for love. God did not create anything except love itself, and the means to love. He created love in all its forms. He created beings capable of love from all possible distances. Because no other could do it, he himself went to the greatest possible distance, the infinite distance. This infinite distance between God and God, this supreme

tearing apart, this incomparable agony, this marvel of love, is the crucifixion. Nothing can be further from God than that which has been made accursed.

This tearing apart, over which supreme love places the bond of supreme union, echoes perpetually across the universe in the depth of the silence, like two notes, separate yet blending into one, like a pure and heart-rending harmony. This is the Word of God. The whole creation is nothing but its vibration. When human music in its greatest purity pierces our soul, this is what we hear through it. When we have learnt to hear the silence, this is what we grasp, even more distinctly, through it.

Those who persevere in love hear this note from the very lowest depths into which affliction has thrust them. From that moment they can no longer have any doubt.

Men struck down by affliction are at the foot of the Cross, almost at the greatest possible distance from God. It must not be thought that sin is a greater distance. Sin is not a distance, it is a turning of our eyes in the wrong direction.

It is true that there is a mysterious connexion between this distance and an original disobedience. From the beginning, we are told, humanity turned its eyes away from God and walked as far as it could in the wrong direction. That is because it was then able to walk. As for us, we are nailed down to the spot, free only to choose which way we will look, ruled by necessity. A blind mechanism, heedless of degrees of spiritual perfection, continually buffets men hither and thither and flings some of them at the very foot of the Cross. It rests with them only to keep or not to keep their eyes turned towards God through all the shocks. It is not that God's Providence is absent; it is by his Providence that God willed necessity as a blind mechanism.

If the mechanism were not blind there would not be any affliction. Affliction is above all anonymous; it deprives its victims of their personality and turns them into things. It is indifferent, and it is the chill of this indifference—a metallic chill—which freezes all those it touches, down to the depth of their soul. They will never find warmth again. They will never again believe that they are anyone.

Affliction would not have this power without the element of chance which it contains. Those who are persecuted for their faith and are aware of it are not afflicted, in spite of their

suffering. They only fall into affliction if suffering or fear fills the soul to the point of making it forget the cause of the persecution. The martyrs who came into the arena singing as they faced the wild beasts were not afflicted. Christ was afflicted. He did not die like a martyr. He died like a common criminal, in the same class as thieves, only a little more ridiculous. For affliction is ridiculous.

Only blind necessity can throw men to the extreme point of distance, close to the Cross. Human crime, which is the cause of most affliction, is part of blind necessity, because criminals do not know what they are doing.

There are two forms of friendship: meeting and separation. They are indissoluble. Both of them contain the same good, the unique good, which is friendship. For when two beings who are not friends are near each other there is no meeting, and when friends are far apart there is no separation. As both forms contain the same good thing, they are both equally good.

God produces himself and knows himself perfectly, just as we in our miserable way make and know objects outside ourselves. But, before all things, God is love. Before all things, God loves himself. This love, this friendship of God, is the Trinity. Between the terms united by this relation of divine love there is more than nearness; there is infinite nearness or identity. But through the Creation, the Incarnation, and the Passion, there is also infinite distance. The interposed density of all space and all time sets an infinite distance between God and God.

Lovers or friends desire two things. The one is to love each other so much that they enter into each other and only make one being. The other is to love each other so much that, having half the globe between them, their union will not be diminished in the slightest degree. All that man vainly desires here below is perfectly realized in God. We have all those impossible desires within us as a mark of our destination, and they are good for us provided we no longer hope to fulfil them.

The love between God and God, which in itself *is* God, is this bond of double power; the bond which unites two beings so closely that they are no longer distinguishable and really form a single unity, and the bond which stretches across distance and triumphs over infinite separation. The unity of God, wherein all plurality disappears, and the abandonment where-

in Christ believes he is left, while not ceasing to love his Father perfectly, these are two forms expressing the divine value of the same Love, the Love which is God himself.

God is so essentially love that the unity, which in a sense is his actual definition, is a pure effect of love. And corresponding to the infinite virtue of unification belonging to this love there is the infinite separation over which it triumphs, which is the whole creation spread throughout the totality of space and time, consisting of mechanically brutal matter and interposed between Christ and his Father.

As for us men, our misery gives us the infinitely precious privilege of sharing in this distance placed between the Son and his Father. This distance is only separation, however, for those who love. For those who love, separation, although painful, is a good, because it is love. Even the distress of the abandoned Christ is a good. There cannot be a greater good for us on earth than to share in it. God can never be perfectly present to us here below on account of our flesh. But he can be almost perfectly absent from us in extreme affliction. For us, on earth, this is the only possibility of perfection. That is why the Cross is our only hope. 'No forest bears such a tree, with this flower, this foliage and this seed.'

This universe where we are living, and of which we form a minute particle, is the distance put by the divine Love between God and God. We are a point in this distance. Space, time, and the mechanism that governs matter are the distance. Everything that we call evil is only this mechanism. God has provided that when his grace penetrates to the very centre of a man and from there illuminates all his being, he is able to walk on the water without violating the laws of nature. But when a man turns away from God he simply gives himself up to the law of gravity. He then believes that he is deciding and choosing, but he is only a thing, a falling stone. If we examine human society and souls closely and with real attention, we see that wherever the virtue of supernatural light is absent, everything is obedient to mechanical laws as blind and as exact as the laws of gravitation. To know this is profitable and necessary. Those whom we call criminals are only tiles blown off a roof by the wind and falling at random. Their only fault is the initial choice by which they became those tiles.

The mechanism of necessity can be transposed on to any level while still remaining true to itself. It is the same in the world of blind matter, in plants, in animals, among nations, and in souls. Seen from our present stand-point, and in human perspective, it is quite blind. If, however, we transport our hearts beyond ourselves, beyond the universe, beyond space and time, to where our Father dwells, and if we regard this mechanism from there, it appears quite different. What seemed to be necessity becomes obedience. Matter is entirely passive and in consequence entirely obedient to God's will. It is a perfect model for us. There cannot be any other being than God and that which obeys God. On account of its perfect obedience, matter deserves to be loved by those who love its Master, in the same way as a needle once used by his beloved who has died is cherished by a lover. The world's beauty gives us an intimation of its claim to a place in our heart. In the beauty of the world harsh necessity becomes an object of love. What is more beautiful than the effect of gravity on sea-waves as they flow in ever-changing folds, or the almost eternal folds of the mountains?

The sea is not less beautiful in our eyes because we know that ships are sometimes wrecked. On the contrary this adds to its beauty. If it altered the movement of its waves to spare a ship it would be a creature gifted with discernment and choice, and not this fluid perfectly obedient to every external pressure. It is this perfect obedience which makes the sea's beauty.

All the horrors which occur in this world are like the folds imposed upon the waves by gravity. That is why they contain an element of beauty. Sometimes a poem, such as the *Iliad* makes this beauty perceptible.

Men can never escape from obedience to God. A creature cannot but obey. The only choice given to men, as intelligent and free creatures, is to desire obedience or not to desire it. If a man does not desire it, he obeys all the same, perpetually, in as much as he is a thing subject to mechanical necessity. If he does desire it, he is still subject to mechanical necessity, but a new necessity is added to it, a necessity constituted by the laws pertaining to supernatural things. Certain actions become impossible for him; others are accomplished by means of him, sometimes almost in spite of himself.

When we have the feeling that on some occasion we have disobeyed God, it simply means that we ceased for a time to desire to be obedient. But of course, other things being equal, a man does not perform the same actions if he gives his consent to obedience as if he does not; any more than a plant, other things being equal, grows in the same way if it is in the light as if it is in the dark. The plant does not have any control or choice in the matter of its own growth. We, however, are like plants which have the one choice of being in or out of the light.

Christ proposed the docility of matter to us as a model when he told us to consider the lilies of the field which neither toil nor spin. This means that they did not set out to clothe themselves in such or such a colour, they have not exercised their will nor made arrangements for such a purpose, they have received everything that natural necessity brought them. If they seem to us infinitely more beautiful than the richest stuffs it is not because they are richer but because of their docility. Materials are docile too, but docile to man, not to God. Matter is not beautiful when it obeys man, but only when it obeys God. If sometimes in a work of art it seems almost as beautiful as in the sea or in mountains or in flowers it is because the light of God has filled the artist. In order to find beautiful those things which are made by men unenlightened by God, it is necessary to have understood with all one's soul that these men themselves are only matter which obeys without knowing it. For anyone who has reached this point, absolutely everything here below is perfectly beautiful. In everything which exists, in everything which happens, he discerns the mechanism of necessity and he recognizes in this necessity the infinite sweetness of obedience. For us, this obedience of things in relation to God is what the transparency of a window pane is in relation to light. As soon as we feel this obedience with our whole being, we see God.

When we hold a newspaper upside down, we see the odd shapes of the printed characters. When we turn it the right way up, we no longer see the characters, we see words. The passenger on a ship in a storm feels each shock as an inward upheaval. The captain is aware only of the complex combination of wind, current, and swell, with the ship's position and its shape, its sails, and its helm.

As one has to learn to read, or to practise a trade, so one must learn to feel in all things, first and almost solely, the obedience of the universe to God. It is truly an apprenticeship; and like every apprenticeship it calls for time and effort. For the man who has finished his training the differences between things or between events are no more important than those perceived by someone who knows how to read when he has before him the same sentence repeated several times, in red ink and blue, and printed in this, that, and the other kind of type. The man who cannot read sees only the differences. For the man who can read it all comes to the same thing, because the sentence is the same. Whoever has finished his apprenticeship recognizes things and events, everywhere and always, as vibrations of the same divine and infinitely sweet word. Which is not to say that he will not suffer. Pain is the colour of certain events. When a man who can and a man who cannot read look at a sentence written in red ink they both see something red; but the red colour is not so important for the one as for the other.

When an apprentice gets hurt or complains of fatigue, workmen and peasants have this fine expression: 'It's the trade getting into his body.' Whenever we have some pain to endure, we can say to ourselves that it is the universe, the order and beauty of the world, and the obedience of creation to God which are entering our body. After that how can we fail to bless with the tenderest gratitude the Love which sends us this gift?

Joy and suffering are two equally precious gifts which must both of them be fully tasted, each one in its purity and without trying to mix them. Through joy, the beauty of the world penetrates our soul. Through suffering it penetrates our body. We could no more become friends of God through joy alone than one becomes a ship's captain by studying books on navigation. The body plays a part in all apprenticeships. On the plane of physical sensibility, suffering alone gives us contact with that necessity which constitutes the order of the world, for pleasure does not involve an impression of necessity. It is on a higher plane of sensibility that the necessity in joy can be recognized, and then only indirectly through the sense of beauty. In order that our being may one day become wholly sensitive in every part to this obedience which is the substance of matter, in order that a new sense may be formed in us

which allows us to hear the universe as the vibration of the word of God, the transforming power of suffering and of joy are equally indispensable. When either of them comes to us we have to open the very centre of our soul to it, as a woman opens her door to messengers from her beloved. What does it matter to a lover if the messenger is courteous or rough so long as he gives her a message?

But affliction is not suffering. Affliction is something quite different from a divine educational method.

The infinity of space and time separates us from God. How can we seek for him? How can we go towards him? Even if we were to walk for endless centuries we should do no more than go round and round the world. Even in an aeroplane we could not do anything else. We are incapable of progressing vertically. We cannot take one step towards the heavens. God crosses the universe and comes to us.

Over the infinity of space and time the infinitely more infinite love of God comes to possess us. He comes at his own time. We have the power to consent to receive him or to refuse. If we remain deaf he comes back again and again like a beggar, but also, like a beggar, one day he stops coming. If we consent, God places a little seed in us and he goes away again. From that moment God has no more to do; neither have we, except to wait. We have only not to regret the consent we gave, the nuptial Yes. It is not as easy as it seems, for the growth of the seed within us is painful. Moreover, from the very fact that we accept this growth we cannot avoid destroying whatever gets in its way, pulling up the weeds, cutting the grasses; and unfortunately they are part of our very flesh, so that this gardening amounts to a violent operation. On the whole, however, the seed grows of itself. A day comes when the soul belongs to God, when it not only consents to love but when truly and effectively it loves. Then in its turn it must cross the universe to go to God. The soul does not love like a creature, with created love. The love within it is divine, uncreated, for it is the love of God for God which is passing through it. God alone is capable of loving God. We can only consent to give up our own feelings so as to allow free passage in our soul for this love. That is the meaning of denying oneself. We were created solely in order to give this consent.

The divine Love crossed the infinity of space and time to come from God to us. But how can it repeat the journey in the opposite direction, starting from a finite creature? When the seed of divine love placed in us has grown and become a tree, how can we, we who bear it, take it back to its origin? How can we make, in the opposite direction, the journey which God made when he came to us? How can we cross infinite distance?

It seems impossible, but there is a way. It is a way well known to us. We are quite well aware of the likeness in which this tree is made, this tree which has grown within us, this most beautiful tree where the birds of the air come and perch. We know what is the most beautiful of all trees. 'No forest bears its equal.' Something even a little more frightful than a gallows —that is the most beautiful of all trees. It was the seed of this tree that God placed within us, without our knowing what seed it was. If we had known, we should not have said Yes at the first moment. It is this tree which has grown within us and which has become ineradicable. Only a betrayal could uproot it.

When a hammer strikes a nail the shock travels, without losing any of its force, from the nail's large head to the point, although it is only a point. If the hammer and the nail's head were infinitely large the effect would still be the same. The point of the nail would transmit this infinite shock at the place where it was applied.

Extreme affliction, which means physical pain, distress of soul, and social degradation, all together, is the nail. The point of the nail is applied to the very centre of the soul, and its head is the whole of necessity throughout all space and time.

Affliction is a marvel of divine technique. It is a simple and ingenious device to introduce into the soul of a finite creature that immensity of force, blind, brutal, and cold. The infinite distance which separates God from the creature is concentrated into a point to transfix the centre of a soul.

The man to whom such a thing occurs has no part in the operation. He quivers like a butterfly pinned alive to a tray. But throughout the horror he can go on wanting to love. There is no impossibility in that, no obstacle, one could almost say no difficulty. Because no pain, however great, up to the point of losing consciousness, touches that part of the soul which consents to a right orientation.

It is only necessary to know that love is an orientation and not a state of the soul. Anyone who does not know this will fall into despair at the first onset of affliction.

The man whose soul remains oriented towards God while a nail is driven through it finds himself nailed to the very centre of the universe; the true centre, which is not in the middle, which is not in space and time, which is God. In a dimension which is not spatial and which is not time, a totally other dimension, the nail has pierced through the whole of creation, through the dense screen which separates the soul from God.

In this marvellous dimension, without leaving the time and place to which the body is bound, the soul can traverse the whole of space and time and come into the actual presence of God.

It is at the point of intersection between creation and Creator. This point is the point of intersection of the two branches of the Cross.

St. Paul was perhaps thinking about things of this kind when he said: 'That ye, being rooted and grounded in love, may be able to comprehend with all saints what is the breadth, and length, and depth, and height; and to know the love of Christ, which passeth knowledge.'[1]

* * *

If the tree of life, and not simply the divine seed, is already formed in a man's soul at the time when extreme affliction strikes him, then he is nailed to the same cross as Christ.

Otherwise, there is the choice between the crosses on each side of Christ's.

We are like the impenitent thief if we seek consolation in contempt and hatred for our fellows in misfortune. This is the commonest effect of real affliction; it was so in the case of Roman slavery. People who are surprised when they observe such a state of mind in the afflicted would almost all fall into it themselves if affliction struck them.

To be like the good thief it is sufficient to remember that no matter what degree of affliction one is submerged in, one has deserved at least that much. Because it is certain that before being

[1] Ephesians 3. 17–19.

reduced to impotence by affliction one has been an accomplice, through cowardice, inertia, indifference, or culpable ignorance, in crimes which have plunged other human beings into an affliction at least as great. Generally, no doubt, we could not prevent those crimes, but we could express our reprobation of them. We neglected to do so, or even approved them, or at least we concurred in the expression of approval around us. For this complicity, the affliction we are suffering is not, in strict justice, too great a penalty. We have no right to feel compassion for ourselves. We know that at least once a perfectly innocent being suffered a worse affliction; it is better to direct our compassion to him across the centuries.

That is what everybody can and ought to say to himself. Because among our institutions and customs there are things so atrocious that nobody can legitimately feel himself innocent of this diffused complicity. It is certain that each of us is involved at least in the guilt of criminal indifference.

But in addition it is the right of every man to desire to have his part in Christ's own Cross. We have an unlimited right to ask God for everything that is good. In such demands there is no need for humility or moderation.

It is wrong to desire affliction; it is against nature, and it is a perversion; and moreover it is the essence of affliction that it is suffered unwillingly. So long as we are not submerged in affliction all we can do is to desire that, if it should come, it may be a participation in the Cross of Christ.

But what is in fact always present, and what it is therefore always permitted to love, is the possibility of affliction. All the three sides of our being are always exposed to it. Our flesh is fragile; it can be pierced or torn or crushed, or one of its internal mechanisms can be permanently deranged, by any piece of matter in motion. Our soul is vulnerable, being subject to fits of depression without cause and pitifully dependent upon all sorts of objects, inanimate and animate, which are themselves fragile and capricious. Our social personality, upon which our sense of existence almost depends, is always and entirely exposed to every hazard. These three parts of us are linked with the very centre of our being in such a way that it bleeds for any wound of the slightest consequence which they suffer. Above all, anything which diminishes or destroys our social prestige, our right

to consideration, seems to impair or abolish our very essence—so much is our whole substance an affair of illusion.

When everything is going more or less well, we do not think about this almost infinite fragility. But nothing compels us not to think about it. We can contemplate it all the time and thank God for it unceasingly. We can be thankful not only for the fragility itself but also for that more intimate weakness which connects it with the very centre of our being. For it is this weakness which makes possible, in certain conditions, the operation by which we are nailed to the very centre of the Cross.

We can think of this fragility, with love and gratitude, on the occasion of any suffering, whether great or small. We can think of it at times when we are neither particularly happy nor unhappy. We can think of it whenever we experience any joy. This, however, we ought not to do if the thought were liable to cloud or lessen the joy. But it is not so. This thought only adds a more piercing sweetness to joy, in the same way that the flowers of the cherry are the more beautiful for being frail.

If we dispose our thought in this way, then after a certain time the Cross of Christ should become the very substance of our life. No doubt this is what Christ meant when he advised his friends to bear their cross each day, and not, as people seem to think nowadays, simply that one should be resigned about one's little daily troubles—which, by an almost sacrilegious abuse of language, people sometimes refer to as crosses. There is only one cross; it is the whole of that necessity by which the infinity of space and time is filled and which, in given circumstances, can be concentrated upon the atom that any one of us is, and totally pulverize it. To bear one's cross is to bear the knowledge that one is entirely subject to this blind necessity in every part of one's being, except for one point in the soul which is so secret that it is inaccessible to consciousness. However cruelly a man suffers, if there is some part of his being still intact and if he is not fully conscious that it has escaped only by chance and remains every moment at the mercy of chance, he has no part in the Cross. This is above all the case when the part of the soul which remains intact, or even relatively intact, is the social part; which is the reason why sickness profits nothing unless there is added to it the spirit of poverty in its perfection. It is possible for a perfectly happy man—if he

recognizes, truly, concretely, and all the time, the possibility of affliction—to enjoy happiness completely and at the same time bear his cross.

But it is not enough to be aware of this possibility; one must love it. One must tenderly love the harshness of that necessity which is like a coin with two faces, the one turned towards us being domination, and the one turned towards God, obedience. We must embrace it closely even if it offers its roughest surface and the roughness cuts into us. Any lover is glad to clasp tightly some object belonging to an absent loved one, even to the point where it cuts into the flesh. We know that this universe is an object belonging to God. We ought to thank God from the depth of our hearts for giving us necessity, his mindless, sightless, and perfectly obedient slave, as absolute sovereign. She drives us with a whip. But being subject in this world to her tyranny, we have only to choose God for our treasure, and put our heart with it, and from that moment we shall see the other face of the tyranny, the face which is pure obedience. We are the slaves of necessity, but we are also the sons of her Master. Whatever she demands of us, we ought to love the sight of her docility, we who are the children of the house. When she does not do as we wish, when she compels us to suffer what we would not, it is given us by means of love to pass through to the other side and to see the face of obedience which she turns towards God. Lucky are those to whom this precious opportunity comes often.

Intense and long-drawn-out physical pain has this unique advantage, that our sensibility is so made as to be unable to accept it. We can get used to, make the best of, and adapt ourselves to anything else except that; and we make the adaptation, in order to have the illusion of power, in order to believe that we are in control. We play at imagining that we have chosen what is forced upon us. But when a human being is transformed, in his own eyes, into a sort of animal, almost paralysed and altogether repulsive, he can no longer retain that illusion. It is all the better if this transformation is brought about by human wills, as a result of social reprobation, provided that it is not an honourable persecution but, as it were, a blind, anonymous oppression. In its physical part, the soul is aware of necessity only as constraint and is aware of constraint only as pain. It is the same truth which penetrates into the senses through pain, into

the intelligence through mathematical proof, and into the faculty of love through beauty. So it was that to Job, when once the veil of flesh had been rent by affliction, the world's stark beauty was revealed. The beauty of the world appears when we recognize that the substance of the universe is necessity and that the substance of necessity is obedience to a perfectly wise Love. The universe of which we are a fraction has no other essence than to be obedient.

In the joy of the senses there is a virtue analogous to that of physical pain, if the joy is so vivid and pure, if it so far exceeds expectation, that we immediately recognize our inability to procure anything like it, or to retain its possession, by our own efforts. Of such joys, beauty is always the essence. Pure joy and pure pain are two aspects of the same infinitely precious truth. Fortunately so, because it is this that gives us the right to wish joy rather than pain to those we love.

The Trinity and the Cross are the two poles of Christianity, the two essential truths: the first, perfect joy; the second, perfect affliction. It is necessary to know both the one and the other and their mysterious unity, but the human condition in this world places us infinitely far from the Trinity, at the very foot of the Cross. Our country is the Cross.

The knowledge of affliction is the key of Christianity. But that knowledge is impossible. It is not possible to know affliction without having been through it. Thought is so revolted by affliction that it is as incapable of bringing itself voluntarily to conceive it as an animal, generally speaking, is incapable of suicide. Thought never knows affliction except by constraint. Unless constrained by experience, it is impossible to believe that everything in the soul—all its thoughts and feelings, its every attitude towards ideas, people, and the universe, and, above all, the most intimate attitude of the being towards itself—that all this is entirely at the mercy of circumstances. Even if one recognizes it theoretically, and it is rare indeed to do so, one does not believe it with all one's soul. To believe it with all one's soul is what Christ called, not renunciation or abnegation, as it is usually translated, but denying oneself; and it is by this that one deserves to be his disciple. But when we are in affliction or have passed through it we do not believe this truth any more than before; one could almost say that we believe it still less.

Thought can never really be constrained; evasion by falsehood is always open to it. When thought finds itself, through the force of circumstance, brought face to face with affliction it takes immediate refuge in lies, like a hunted animal dashing for cover. Sometimes in its terror it burrows very deep into falsehood and it often happens that people who are or have been in affliction become addicted to lying as a vice, in some cases to such a degree that they lose the sense of any distinction between truth and falsehood in anything. It is wrong to blame them. Falsehood and affliction are so closely linked that Christ conquered the world simply because he, being the Truth, continued to be the Truth in the very depth of extreme affliction. Thought is constrained by an instinct of self-preservation to fly from the sight of affliction, and this instinct is infinitely more essential to our being than the instinct to avoid physical death. It is comparatively easy to face physical death so long as circumstances or the play of imagination present it under some other aspect than that of affliction. But to be able to face affliction with steady attention when it is close to him a man must be prepared, for the love of truth, to accept the death of the soul. This is the death of which Plato spoke when he said 'to philosophize is to learn to die'; it is the death which was symbolized in the initiation rites of the ancient mysteries, and which is represented by baptism. In reality, it is not a question of the soul's dying, but simply of recognizing the truth that it is a dead thing, something analogous to matter. It has no need to turn into water; it is water; the thing we believe to be our self is as ephemeral and automatic a product of external circumstances as the form of a sea-wave.

It is only necessary to know that, to know it in the depth of one's being. But to know humanity in that way belongs to God alone and to those in this world who have been regenerated from on high. For it is impossible to accept that death of the soul unless one possesses another life in addition to the soul's illusory life, unless one has placed one's treasure and one's heart elsewhere—and not merely outside one's person but outside all one's thoughts and feelings and outside everything knowable, in the hands of our Father who is in secret. Of those who have done this one can say that they have been born of water and the Spirit; for they are no longer anything except a two-fold

obedience—on the one side to the mechanical necessity in which their earthly condition involves them, and on the other to the divine inspiration. There is nothing left in them which one could call their own will, their person, their 'I'. They have become nothing other than a certain intersection of nature and God. This intersection is the name with which God has named them from all eternity; it is their vocation. In the old baptism by immersion the man disappeared under the water; this means to deny one's self, to acknowledge that one is only a fragment of the inert matter which is the fabric of creation. He only reappeared because he was lifted up by an ascending movement stronger than gravity; this is the image of the divine love in man. Baptism contains the symbol of the state of perfection. The engagement it involves is the promise to desire that state and to beseech God for it, incessantly and untiringly, for as long as one has not obtained it—as a hungry child never stops asking his father for bread. But we cannot know what this promise commits us to until we encounter the terrible presence of affliction. It is only there, face to face with affliction, that the true commitment can be made, through a more secret, more mysterious, more miraculous contact even than a sacrament.

The knowledge of affliction being by nature impossible both to those who have experienced it and to those who have not, it is equally possible for both of them by supernatural favour; otherwise Christ would not have spared from affliction the man he cherished above all, and after having promised that he should drink from his cup. In both cases the knowledge of affliction is something much more miraculous than walking on water.

Those whom Christ recognized as his benefactors are those whose compassion rested upon the knowledge of affliction. The others give capriciously, irregularly, or else too regularly, or from habit imposed by training, or in conformity with social convention, or from vanity or emotional pity, or for the sake of a good conscience—in a word, from self-regarding motives. They are arrogant or patronizing or tactlessly sympathetic, or they let the afflicted man feel that they regard him simply as a specimen of a certain type of affliction. In any case, their gift is an injury. And they have their reward on earth, because their left hand is not unaware of what their right hand gave. Their

contact with the afflicted must be a false one because the true understanding of the afflicted implies knowledge of affliction. Those who have not seen the face of affliction, or are not prepared to, can only approach the afflicted behind a veil of illusion or falsehood. If the look of affliction itself is revealed by chance on the face of the afflicted, they run away.

The benefactor of Christ, when he meets an afflicted man, does not feel any distance between himself and the other. He projects all his own being into him. It follows that the impulse to give him food is as instinctive and immediate as it is for oneself to eat when one is hungry. And it is forgotten almost at once, just as one forgets yesterday's meals. Such a man would not think of saying that he takes care of the afflicted for the Lord's sake; it would seem as absurd to him as it would be to say that he eats for the Lord's sake. One eats because one can't help it. Christ will thank the people who give in the way they eat.

They do for the afflicted something very different from feeding, clothing, or taking care of them. By projecting their own being into those they help they give them for a moment—what affliction has deprived them of—an existence of their own. Affliction is essentially a destruction of personality, a lapse into anonymity. Just as Christ put off his divinity for love, so the afflicted are stripped of their humanity by misfortune. In affliction, that misfortune itself becomes a man's whole existence and in every other respect he loses all significance, in everybody's eyes including his own. There is something in him that would like to exist, but it is continually pushed back into nothingness, like a drowning man whose head is pushed under the water. He may be a pauper, a refugee, a negro, an invalid, an ex-convict, or anything of the kind; in any case, whether he is an object of ill usage or of charity he will in either case be treated as a cipher, as one item among many others in the statistics of a certain type of affliction. So both good treatment and bad treatment will have the same effect of compelling him to remain anonymous. They are two forms of the same offence.

The man who sees someone in affliction and projects into him his own being brings to birth in him through love, at least for a moment, an existence apart from his affliction. For, although affliction is the occasion of this supernatural process, it is not

the cause. The cause is the identity of human beings across all the apparent distances placed between them by the hazards of fortune.

To project one's being into an afflicted person is to assume for a moment his affliction, it is to choose voluntarily something whose very essence consists in being imposed by constraint upon the unwilling. And that is an impossibility. Only Christ has done it. Only Christ and those men whose whole soul he possesses can do it. What these men give to the afflicted whom they succour, when they project their own being into them, is not really their own being, because they no longer possess one; it is Christ himself.

Charity like this is a sacrament, a supernatural process by which a man in whom Christ dwells really puts Christ into the soul of the afflicted. If it is bread that is given, this bread is equivalent to the host. And this is not speaking symbolically or by conjecture, it is a literal translation of Christ's own words. He says: 'You have done it unto me.' Therefore he is in the naked or starving man. But he is not there in virtue of the nakedness or hunger, because affliction in itself contains no gift from above. Therefore Christ's presence can only be due to the operation of charity. It is obvious that Christ is in the man whose charity is perfectly pure; for who could be Christ's benefactor except Christ himself? And it is easy to understand that only Christ's presence in a soul can put true compassion in it. But the Gospel reveals further that he who gives from true compassion gives Christ himself. The afflicted who receive this miraculous gift have the choice of consenting to it or not.

In affliction, if it is complete, a man is deprived of all human relationship. For him there are only two possible kinds of relation with men: the first, in which he figures only as a thing, is as mechanical as the relation between two contiguous drops of water, and the second is purely supernatural love. All relationships between these two extremes are forbidden him. There is no place in his life for anything except water and the Spirit. Affliction, when it is consented to and accepted and loved, is truly a baptism.

It is because Christ alone is capable of compassion that he received none while he was on earth. Being in the flesh in this world, he was not at the same time in the souls of those around

him; and so there was no one to have pity on him. When suffering compelled him to seek pity, his closest friends refused it; they left him to suffer alone. Even John slept; and Peter, who had been able to walk on water, was incapable of pity when his master fell into affliction. So as to avoid seeing him, they took refuge in sleep. When Pity herself becomes affliction, where can she turn for help? It would have needed another Christ to have pity on Christ in affliction. In the centuries that followed, pity for Christ's affliction was one of the signs of sanctity.

The supernatural process of charity, as opposed to that of communion, for example, does not need to be completely conscious. Those whom Christ thanks reply: 'Lord, when . . .?' They did not know whom they were feeding. In general, there is nothing even to show that they knew anything at all about Christ. They may or they may not have. The important thing is that they were just; and because of that the Christ within them gave himself in the form of almsgiving. Beggars are fortunate people, in that there is a possibility of their receiving once or twice in their life such an alms.

Affliction is truly at the centre of Christianity. Through it is accomplished the sole and two-fold commandment: 'Love God', 'Love your neighbour.' For, as regards the first, it was said by Christ: 'No man cometh unto the Father, but by me'; and he also said: 'As Moses lifted up the serpent in the wilderness, even so must the Son of man be lifted up: that whosoever believeth in him should not perish, but have eternal life.' The serpent is that serpent of bronze which it was sufficient to look upon to be saved from the effects of poison. Therefore it is only by looking upon the Cross that we can love God. And as regards our neighbour, Christ has said who is the neighbour whom we are commanded to love. It is the naked, bleeding, and senseless body which we see lying in the road. What we are commanded to love first of all is affliction: the affliction of man, the affliction of God.

People often reproach Christianity for a morbid preoccupation with suffering and grief. This is an error. Christianity is not concerned with suffering and grief, for they are sensations, psychological states, in which a perverse indulgence is always possible; its concern is with something quite different, which is

affliction. Affliction is not a psychological state; it is a pulverization of the soul by the mechanical brutality of circumstances. The transformation of a man, in his own eyes, from the human condition into that of a half-crushed worm writhing on the ground is a process which not even a pervert would find attractive. Neither does it attract a sage, a hero, or a saint. Affliction is something which imposes itself upon a man quite against his will. Its essence, the thing it is defined by, is the horror, the revulsion of the whole being, which it inspires in its victim. And this is the very thing one must consent to, by virtue of supernatural love.

It is our function in this world to consent to the existence of the universe. God is not satisfied with finding his creation good; he wants it also to find itself good. That is the purpose of the souls which are attached to minute fragments of this world; and it is the purpose of affliction to provide the occasion for judging that God's creation is good. Because, so long as the play of circumstance around us leaves our being almost intact, or only half impaired, we more or less believe that the world is created and controlled by ourselves. It is affliction that reveals, suddenly and to our very great surprise, that we are totally mistaken. After that, if we praise, it is really God's creation that we are praising. And where is the difficulty? We are well aware that divine glory is in no way diminished by our affliction; therefore we are in no way prevented from praising God for his great glory.

Thus, affliction is the surest sign that God wishes to be loved by us; it is the most precious evidence of his tenderness. It is something altogether different from a paternal chastisement, and could more justly be compared to the tender quarrels by which a young couple confirm the depth of their love. We dare not look affliction in the face; otherwise we should see after a little time that it is the face of love. In the same way Mary Magdalene perceived that he whom she took to be the gardener was someone else.

Seeing the central position occupied in their faith by affliction, Christians ought to suspect that it is in a sense the very essence of creation. To be a created thing is not necessarily to be afflicted, but it is necessarily to be exposed to affliction. Only the uncreated is indestructible. Those who ask why God permits

affliction might as well ask why God created. And that, indeed, is a question one may well ask. Why did God create? It seems so obvious that God is greater than God and the creation together. At least, it seems obvious so long as one thinks of God as Being. But that is not how one ought to think of him. So soon as one thinks of God as Love one senses that marvel of love by which the Father and the Son are united both in the eternal unity of the one God and also across the separating distance of space and time and the Cross.

God is love, and nature is necessity; but this necessity, through obedience, is a mirror of love. In the same way, God is joy, and creation is affliction; but it is an affliction radiant with the light of joy. Affliction contains the truth about our condition. They alone will see God who prefer to recognize the truth and die, instead of living a long and happy existence in a state of illusion. One must want to go towards reality; then, when one thinks one has found a corpse, one meets an angel who says: 'He is risen.'

The Cross of Christ is the only source of light that is bright enough to illumine affliction. Wherever there is affliction, in any age or any country, the Cross of Christ is the truth of it. Any man, whatever his beliefs may be, has his part in the Cross of Christ if he loves truth to the point of facing affliction rather than escape into the depths of falsehood. If God had been willing to withold Christ from the men of any given country or epoch, we should know it by an infallible sign: there would be no affliction among them. We know of no such period in history. Wherever there is affliction there is the Cross—concealed, but present to anyone who chooses truth rather than falsehood and love rather than hate. Affliction without the Cross is hell, and God has not placed hell upon the earth.

Conversely, there are many Christians who have no part in Christ because they lack the strength to recognize and worship the blessed Cross in every affliction. There is no such proof of feebleness of faith as the way in which people, even including Christians, sidetrack the problem of affliction when they discuss it. All the talk about original sin, God's will, Providence and its mysterious plans (which nevertheless one thinks one can try to fathom), and future recompenses of every kind in this world and the next, all this only serves to conceal the reality of affliction,

or else fails to meet the case. There is only one thing that enables us to accept real affliction, and that is the contemplation of Christ's Cross. There is nothing else. That one thing suffices.

A mother, a wife, or a fiancée, if they know that the person they love is in distress, will want to help him and be with him, and if that is impossible they will at least seek to lessen their distance from him and lighten the heavy burden of impotent sympathy by suffering some equivalent distress. Whoever loves Christ and thinks of him on the Cross should feel a similar relief when gripped by affliction.

By reason of the essential link between the Cross and affliction, no State has the right to dissociate itself from all religion except on the absurd hypothesis that it has succeeded in abolishing affliction. *A fortiori* it has no such right if it is itself creating affliction. A penal system entirely dissociated from any reference to God has a really infernal aura. Not on account of wrong verdicts or excessive punishments but, apart from all that, in itself. It defiles itself by contact with every defilement, and since it contains no purifying principle it becomes so polluted that it can further degrade even the most degraded criminal. Contact with it is hideous for anyone with any integrity or health of mind; and, as for the corrupt, they find an even more horribly corrupt sort of appeasement in the very punishments it inflicts. Nothing is pure enough to bring purity to the places reserved for crime and punishment except Christ, who was himself condemned by the law.

But it is only the Cross, and not the complications of dogma, that is needed by States; and it is disastrous that the Cross and dogma have become so closely linked. By this link, Christ has been drawn away from the criminals who are his brothers.

The idea of necessity as the material common to art, science, and every kind of labour is the door by which Christianity can enter profane life and permeate the whole of it. For the Cross is necessity itself brought into contact with the lowest and the highest part of us; with our physical sensibility by its evocation of physical pain and with supernatural love by the presence of God. It thus involves the whole range of contacts with necessity which are possible for the intermediate parts of our being.

There is not, there cannot be, any human activity in whatever sphere, of which Christ's Cross is not the supreme and

secret truth. No activity can be separated from it without rotting or shrivelling like a cut vine-shoot. That is what is happening today, before our uncomprehending eyes, while we ask ourselves what has gone wrong. And Christians comprehend least of all because, knowing that the roots of our activities go back long before Christ, they cannot understand that the Christian faith is the sap in them.

But this would be no probelm if we understood that the Christian faith, under veils which do not obscure its radiance, comes to flower and fruit at every time and every place where there are men who do not hate the light.

Never since the dawn of history, except for a certain period of the Roman Empire, has Christ been so absent as today. The separation of religion from the rest of social life, which seems natural even to the majority of Christians nowadays, would have been judged monstrous by antiquity.

The sap of Christianity should be made to flow everywhere in the life of society; but nevertheless it is destined above all for man in solitude. The Father is in secret, and there is no secret more inviolable than affliction.

There is a question which is absolutely meaningless and therefore, of course, unanswerable, and which we normally never ask ourselves, but in affliction the soul is constrained to repeat it incessantly like a sustained, monotonous groan. This question is: Why? Why are things as they are? The afflicted man naïvely seeks an answer, from men, from things, from God, even if he disbelieves in him, from anything or everything. Why is it necessary precisely that he should have nothing to eat, or be worn out with fatigue and brutal treatment, or be about to be executed, or be ill, or be in prison? If one explained to him the causes which have produced his present situation, and this is in any case seldom possible because of the complex interaction of circumstances, it will not seem to him to be an answer. For his question 'Why?' does not mean 'By what cause?' but 'For what purpose?' And it is impossible, of course, to indicate any purposes to him; unless we invent some imaginary ones, but that sort of invention is not a good thing.

It is singular that the affliction of other people, except sometimes, though not always, those very close to us, does not provoke this question. At the most, it may occur to us casually

for a moment. But so soon as a man falls into affliction the question takes hold and goes on repeating itself incessantly. Why? Why? Why? Christ himself asked it: 'Why hast thou forsaken me?'

There can be no answer to the 'Why?' of the afflicted, because the world is necessity and not purpose. If there were finality in the world, the place of the good would not be in the other world. Whenever we look for final causes in this world it refuses them. But to know that it refuses, one has to ask.

The only things that compel us to ask the question are affliction, and also beauty; for the beautiful gives us such a vivid sense of the presence of something good that we look for some purpose there, without ever finding one. Like affliction, beauty compels us to ask: Why? Why is this thing beautiful? But rare are those who are capable of asking themselves this question for as long as a few hours at a time. The afflicted man's question goes on for hours, days, years; it ceases only when he has no strength left.

He who is capable not only of crying out but also of listening will hear the answer. Silence is the answer. This is the eternal silence for which Vigny bitterly reproached God; but Vigny had no right to say how the just man should reply to the silence, for he was not one of the just. The just man loves. He who is capable not only of listening but also of loving hears this silence as the word of God.

The speech of created beings is with sounds. The word of God is silence. God's secret word of love can be nothing else but silence. Christ is the silence of God.

Just as there is no tree like the Cross, so there is no harmony like the silence of God. The Pythagoreans discerned this harmony in the fathomless eternal silence around the stars. In this world, necessity is the vibration of God's silence.

Our soul is constantly clamorous with noise, but there is one point in it which is silence, and which we never hear. When the silence of God comes to the soul and penetrates it and joins the silence which is secretly present in us, from then on we have our treasure and our heart in God; and space opens before us as the opening fruit of a plant divides in two, for we are seeing the universe from a point situated outside space.

This operation can take place in only two ways, to the

exclusion of all others. There are only two things piercing enough to penetrate our souls in this way; they are affliction and beauty.

Often, one could weep tears of blood to think how many unfortunates are crushed by affliction without knowing how to make use of it. But, coolly considered, this is not a more pitiful waste than the squandering of the world's beauty. The brightness of stars, the sound of sea-waves, the silence of the hour before dawn—how often do they not offer themselves in vain to men's attention? To pay no attention to the world's beauty is, perhaps, so great a crime of ingratitude that it deserves the punishment of affliction. To be sure, it does not always get it; but then the alternative punishment is a mediocre life, and in what way is a mediocre life preferable to affliction? Moreover, even in the case of great misfortune such people's lives are probably still mediocre. So far as conjecture is possible about sensibility, it would seem that the evil within a man is a protection against the external evil that attacks him in the form of pain. One must hope it is so, and that for the impenitent thief God has mercifully reduced to insignificance such useless suffering. In fact, it certainly is so, because that is the great temptation which affliction offers; it is always possible for an afflicted man to suffer less by consenting to become wicked.

The man who has known pure joy, if only for a moment, and who has therefore tasted the flavour of the world's beauty, for it is the same thing, is the only man for whom affliction is something devastating. At the same time, he is the only man who has not deserved this punishment. But, after all, for him it is no punishment; it is God himself holding his hand and pressing it rather hard. For, if he remains constant, what he will discover buried deep under the sound of his own lamentations is the pearl of the silence of God.

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